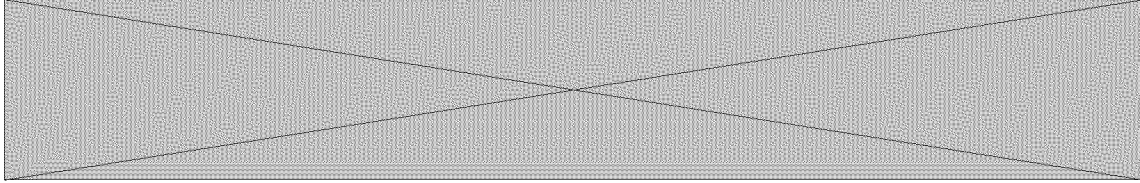


**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Thur 1/2/2014 5:01:39 PM  
**Subject:** Green Car Report Daily Headlines

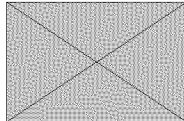
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The latest from your friends at GCR:

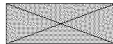
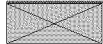
## **Audi Sport Quattro Laserlight Concept, Solar Ford C-Max, Electric-Car Residuals: Today's Car News**

Jan 02, 2014 04:49 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



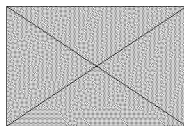
Today on Green Car Reports: An updated version of the Audi Sport quattro plug-in hybrid concept will debut at the 2014 Consumer Electronics Show, the Ford C-Max Solar Energi can recharge at least partly with sunlight, and Kelly Blue Book isn't optimistic about electric-car residual values. All this and more on Green Car Reports. Renewable "pedal..."

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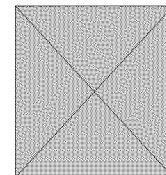
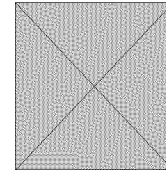
## **As Battery Cost Falls, Fast-Charging Becomes Key Electric-Car Issue**

Jan 02, 2014 03:33 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



It's a given that the costs of batteries for electric cars will fall in the coming years. The industry hotly debates how much and how fast--after interviewing numerous auto and battery engineers, our figure is around 7 percent a year--but by 2020 or so, costs may be as low

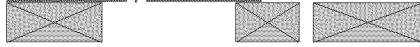
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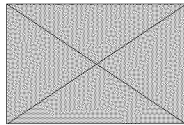
as half what they were in 2011 when the Nissan Leaf and Chevy Volt...

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## Mercedes-Benz GLK 250 BlueTEC Diesel: Luxury Crossover Fuel Economy

Jan 02, 2014 02:53 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



This year has seen several new diesel passenger vehicles hit U.S. roads, and last fall, we were able to spend a full weekend with the 2013 Mercedes-Benz GLK 250 BlueTEC 4matic crossover. We'd driven the luxury compact utility vehicle for a day last spring, and enjoyed it—but we wanted to put it through our usual drive cycle to see what kind of...

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## Ford C-Max Solar Energi Concept: Using The Sun To Charge Electric Car

Jan 02, 2014 01:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



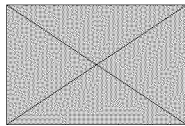
Solar power has proven itself better for static charging than it has for on-vehicle use, even if Australia's Solar Challenge race has shown solar cars to be possible under certain, very specific conditions. The trouble is, electric cars draw too much power and take up too small an area for solar roofs to charge them as they drive along. There are...

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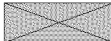
## Residual Values On Battery- Electric Cars: KBB Is Not Optimistic

Jan 02, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



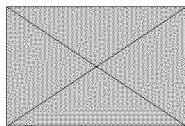
The year 2014 looks like it could be a very good one for plug-in vehicles, with new launches and expected sales increases heading the list of reasons to cheer. But it wouldn't be a new year without a few doom and gloom predictions, and the latest come from Kelly Blue Book's figures for electric car residual values. They aren't good, in short. But...

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## Audi Sport Quattro Laserlight Plug-In Hybrid Concept To Premiere At CES

Jan 02, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



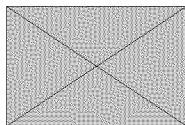
Most modern concept cars are lightly glitzed-up versions of the cars we'll see on the streets in subsequent years, but every so often an automaker develops a concept simply to show off its future technology. That's certainly the case with the Audi Sport Quattro Laserlight plug-in hybrid concept going on display at this year's Consumer Electronics...

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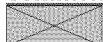
## Norway's Electric Cars: Already Too Popular?

Jan 02, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



Is it possible for electric cars to be too popular? Thanks to supportive government policies and relatively short average commuting distances, Norway has become the friendliest place in the world for plug-in cars. Now, there may be too many of them on the country's roads. The country is starting to have more electric cars than it can handle...

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**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**Cc:** French, Roberts[french.roberts@epa.gov]; Schmidt, Oliver (EEO)[Oliver.Schmidt@vw.com]; Snyder, Jim[Snyder.Jim@epa.gov]; Kata, Leonard (EEO)[Leonard.Kata@vw.com]  
**From:** Good, David  
**Sent:** Thur 1/2/2014 8:37:41 PM  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)  
VW 2012 Final CAFE PC from Verify-pages-1 to 5 only--12-23-2013.pdf

Richard,

Happy New Year, etc.

When you get a chance, please email me a copy of the revision/addendum to the attached VW CAFE letter (and enter it into the Verify document module).

Thanks

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Thursday, December 26, 2013 9:05 AM  
**To:** Good, David  
**Cc:** French, Roberts; Schmidt, Oliver (EEO); Snyder, Jim; Kata, Leonard (EEO)  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Hi Dave;

I checked the files and found that our letter you attached contained a typo, the correct Import Passenger Car CAFE reformed standard should be 33.7 MPG as you see from the Verify processing report, and not the 30.7 MPG. I will revise the letter, if you prefer, when I am back in the office on January 7<sup>th</sup>.

Happy New Year!

Richard

**From:** Good, David [<mailto:good.david@epa.gov>]  
**Sent:** Monday, December 23, 2013 2:34 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** French, Roberts; Schmidt, Oliver (EEO); Snyder, Jim  
**Subject:** 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Richard,

While reviewing VW's 2012 Passenger Car CAFE letter & the data in Verify, I noticed a discrepancy in the VW letter (attached) and the Verify Report (attached) for the Import passenger car CAFE standard. Page 1 of VW letter indicates an Import Pass Car standard of 30.7 mpg while the Verify report indicates a manufacturer input CAFE standard of 33.674.

Your CAFE letter didn't supply the footprint standards calculations, so I can't double check the standard listed on page 1 of the letter.

Based on the footprint data which you entered into Verify, Verify calculated a CAFE standard of 33.7 mpg.

Please advise.

Thanks

**To:** Good, David[good.david@epa.gov]  
**From:** [REDACTED] **Ex. 7**  
**Sent:** Thur 1/2/2014 8:37:51 PM  
**Subject:** Automatic reply: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

[REDACTED] **Ex. 7** is currently away from the office, and will be returning on Monday, January 6, 2014.

**To:** Henrietta.Dandy@dot.gov[Henrietta.Dandy@dot.gov];  
terry.anderson@dot.gov[terry.anderson@dot.gov]; Harry.Thompson@dot.gov[Harry.Thompson@dot.gov]  
**Cc:** French, Roberts[french.roberts@epa.gov]  
**From:** Good, David  
**Sent:** Fri 1/3/2014 2:53:35 PM  
**Subject:** FW: Status of 2012 CAFE submissions

Henrietta & all,

Here's the status of the 2012 CAFEs,

**Non-Responsive**

**Non-Responsive**

Dave

**From:** Wehrly, Linc  
**Sent:** Friday, December 20, 2013 2:52 PM  
**To:** Claude.Harris@dot.gov  
**Cc:** james.tamm@dot.gov; Bunker, Byron; Zaremski, Sara; Good, David  
**Subject:** Status of 2012 CAFE submissions

Claude,

We have made a valiant effort to get all of the CAFE/GHG submissions complete and sent out to NHTSA by today (12/20/13). We have been mostly successful, but there are still some submissions that we will not be able to fully provide by today. The following is a status of those manufacturers that we still have some outstanding issues that need to be resolved.

**Volkswagen/Porsche:**

Per conversation between myself and Jim Tamm earlier this week, pending NHTSA decision on combining VW and Porsche, EPA will hold off on sending the VW data to NHTSA (Porsche data has already been sent).



**Non-Responsive**

Non-Responsive

We fully plan to have these few remaining issues resolved and all information submitted to NHTSA by early January.

Hope you all have a Happy Holidays!

Regards,

Linc

Linc Wehrly

Director, Light-Duty Vehicle Center

Compliance Division

Office of Transportation and Air Quality

United States Environmental Protection Agency

(734) 214-4286

[wehrly.linc@epa.gov](mailto:wehrly.linc@epa.gov)

To: Andrew Kosiak[AKosiak@tuthill.com]; Atit Amin[atit.amin@exxonmobil.com]; Brendan Foster[brendan@benecor.net]; C Moughlor[camoughlor@ashland.com]; Dean, Clifford[Dean.Clifford@epa.gov]; D Wyeany[dwyeany@ashland.com]; David Kayes[davidkayes@freightline.com]; David Shaw[dshaw@cleanemissionfluids.com]; Dennis Smith[dennis.a.smith@ee.doe.gov]; F Lockwood[IMCEAEX-  
\_O=AUTO+20ALLIANCE\_OU=AAM\_cn=Recipients\_cn=FLockwood@autoalliance.org]; Frank Rutten[Frank.Rutten@shell.com]; G Croce[GCroce@chevron.com]; Greg McAfee[greg.mcafee@chsinc.com]; Hauke Braack[hauke.braack@exxonmobil.com]; I  
Ex. 6 J Barr[jbarr@ryder.com]; J Fellman[jfellman@nacsonline.com]; J Suchecki[jsucheck@emamail.org]; Jackie Yeager[jackie.m.yeager@cummins.com]; jsong@meca.org[jsong@meca.org]; Karl Tasik[karl.tasik@volvo.com]; Ken Howden[ken.howden@ee.doe.gov]; Ex. 6 Lance Tunick[tunick@vsci.net]; Larry Northup[larry.northup@aftermarket.org]; Wehrly, Linc[wehrly.linc@epa.gov]; M Buczek[mbuczek@venturepointresearch.com]; Marcel de Kort[marceldekort@greenchem-adblue.com]; Mark Busch[mbusch@cleanemissionfluids.com]; Ex. 6 Oliver Baer[obaer@cleanemissionfluids.com]; Ex. 6 Patrick Kelly[kellyp@api.org]; Patrik Klintbom[patrik.klintbom@volvo.com]; Robert Fasnacht[robert.fasnacht@volvo.com]; Robert Jorgensen[robert.a.jorgensen@cummins.com]; Robert M. Clarke[robertmclarke@truckmfgs.org]; Robert Rupert[robert.rupert@dot.gov]; Rosemary Perry[rosemary.perry@aftermarket.org]; Ross Johnson[Ross.Johnson@yara.com]; Ryan Carroll[ryan.carroll@aftermarket.org]; Steve Berry[steve.berry@volvo.com]; T Columbus[tolumbus@steptoe.com]; Taylor Davis[davistaylor@johndeere.com]; Goff\_Terry\_A@cat.com[Goff\_Terry\_A@cat.com]; Uzel Memed[memed.uzel@volvo.com]; Vic Meloche[vic.meloche@detroitdiesel.com]; Warren Kotacska[wkotacska@colonial-chemical.com]; Yuri Kalish[yuri.kalish@detroitdiesel.com]; Zafar Shaikh[fshaikh@ford.com]; ldc@cervantes-delgado.com[ldc@cervantes-delgado.com]; 'Lonsdale, Barry'[BLonsdale@terrainindustries.com]; 'Groeneveld, Michel'[michel.groeneveld@dureal.com]; D Gilligan[dgilligan@pmaa.org]; 'KAYLC@kochind.com'[KAYLC@kochind.com]; 'Brodt-Giles, Debbie'[Debbie\_Brodt\_Giles@nrel.gov]; 'Claassen, Matt'[CLAASSEM@kochind.com]; 'Mark S. Morgan, Esq.'[mmorganpsta@cox.net]; 'Christopher Pett'[Christopher.Pett@integer-research.com]; 'Johnson Joy'[joy.johnson@volvo.com]; rbrezny@meca.org[rbrezny@meca.org]; 'Brandon Wright'[bwright@pmaa.org]; 'robert.aman@skf.com'[robert.aman@skf.com]; 'shauncmmsusa@nycap.rr.com'[shauncmmsusa@nycap.rr.com]; Friedrich Krahn[friedrich.krahn@daimler.com]; 'thomas.troeger@rehau.com'[thomas.troeger@rehau.com]; 'manoj.tummala@gm.com'[manoj.tummala@gm.com]; Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]; 'toshiya.shiozawa@hino.co.jp'[toshiya.shiozawa@hino.co.jp]; 'kato@hino.com'[kato@hino.com]; 'daniels@hino.com'[daniels@hino.com]; 'bachelder@api.org'[bachelder@api.org]; 'gsgutowski@aaamichigan.com'[gsgutowski@aaamichigan.com]; 'r.boeker@alumag.de'[r.boeker@alumag.de]; Ex. 6 rsompel@cfindustries.com[rsompel@cfindustries.com]; saverio.verduci@gm.com[saverio.verduci@gm.com]; erich@thebeckercompanies.com[erich@thebeckercompanies.com]; brent.calcut@detroitdiesel.com[brent.calcut@detroitdiesel.com]; halfano@natso.com[halfano@natso.com]; r.modlin@chrysler.com[r.modlin@chrysler.com]; Steve Mazure[srm2@chrysler.com]; Klaus Land[klaus.land@daimler.com]; 'dbilby@cfindustries.com'[dbilby@cfindustries.com]; 'shawn.whitacre@cummins.com'[shawn.whitacre@cummins.com]; 'mansour.masoudi@us.bosch.com'[mansour.masoudi@us.bosch.com]; 'andy.arendt@chsinc.com'[andy.arendt@chsinc.com]; 'mikedelaney@freightliner.com'[mikedelaney@freightliner.com]; 'adiamond@cfindustries.com'[adiamond@cfindustries.com]; 'kdoran@quixotegroup.com'[kdoran@quixotegroup.com]; 'kingsley.maunder@integer-research.com'[kingsley.maunder@integer-research.com]; Mike Zammit[mz10@chrysler.com]; 'alstair.wallace@integer-research.com'[alstair.wallace@integer-research.com]; 'akl@airbluefluids.com'[akl@airbluefluids.com]; 'otis.clay@agcocorp.com'[otis.clay@agcocorp.com];

'LWitek@brenntag.com'[LWitek@brenntag.com]; 'tim.cheyne@integer-research.com'[tim.cheyne@integer-research.com]; 'steven.yarosz@isza.com'[steven.yarosz@isza.com]; Jeff Marsee[Jeff.Marsee@isza.com]; 'shin.shirao@isza.com'[shin.shirao@isza.com]; 'dennis.feist@shell.com'[dennis.feist@shell.com]; Hubert Schnupke[hubert.schnuepke@daimler.com]; swrobinson@potashcorp.com[swrobinson@potashcorp.com]; 'thighfield@terrainindustries.com'[thighfield@terrainindustries.com]; 'ernst.olav.strutz@yara.com'[ernst.olav.strutz@yara.com]; Carlheinz Bayer[carlheinzbayer@bmwna.com]; 'vsrinivasan@balcrank.com'[vsrinivasan@balcrank.com]; 'jack.fischbein@shell.com'[jack.fischbein@shell.com]; 'roger.cudini@shell.com'[roger.cudini@shell.com]; 'tblubaugh@emamail.org'[tblubaugh@emamail.org]; 'ntellam@ryder.com'[ntellam@ryder.com]; 'William Linden'[wlinden@sentelligence.com]; 'Novak, Brent'[NovakB@kochind.com]; 'Chandasir, Muhammad'[Muhammad.Chandasir@agcocorp.com]; 'aarmstrong@industrialsolutionservices.com'[aarmstrong@industrialsolutionservices.com]; 'brouthier@trucking.org'[brouthier@trucking.org]; 'charlie\_carr@andersonsinc.com'[charlie\_carr@andersonsinc.com]; 'wcherz@tfi.org'[wcherz@tfi.org]; William Craven[william.craven@daimler.com]; 'miguel.soetaert@detroitdiesel.com'[miguel.soetaert@detroitdiesel.com]; 'jbeumler@terrainindustries.com'[jbeumler@terrainindustries.com]; 'jaime.francis@cummins.com'[jaime.francis@cummins.com]; 'cac@airbluefluids.com'[cac@airbluefluids.com]; 'awd@cervantes-delgado.com'[awd@cervantes-delgado.com]; 'kevin.devinney@gilbarco.com'[kevin.devinney@gilbarco.com]; 'jfrend@steptoe.com'[jfrend@steptoe.com]; 'aharada@itepsa.com'[aharada@itepsa.com]; 'sariga@itepsa.com'[sariga@itepsa.com]; 'gkroon@agrium.com'[gkroon@agrium.com]; 'asmith@brenntag.com'[asmith@brenntag.com]; 'cmurphy@brenntag.com'[cmurphy@brenntag.com]; 'david.siler@detroitdiesel.com'[david.siler@detroitdiesel.com]; 'rakesh.aneja@detroitdiesel.com'[rakesh.aneja@detroitdiesel.com]; 'kent.robinson@dresser.com'[kent.robinson@dresser.com]; 'bcarter@excelda.com'[bcarter@excelda.com]; 'sue.m.clark@exxonmobil.com'[sue.m.clark@exxonmobil.com]; 'dpolak@ezfuel.com'[dpolak@ezfuel.com]; 'joseph.butler@flyingj.com'[joseph.butler@flyingj.com]; 'richard.peterson@flyingj.com'[richard.peterson@flyingj.com]; 'dgenheimer@quixotegroup.com'[dgenheimer@quixotegroup.com]; 'bagdasarian.ara@tatravelcenter.com'[bagdasarian.ara@tatravelcenter.com]; 'jameson.pat@tatravelcenters.com'[jameson.pat@tatravelcenters.com]; 'cburns@larsonco.com'[cburns@larsonco.com]; 'jeroen.schoonderbeek@yara.com'[jeroen.schoonderbeek@yara.com]; 'jboester@tuthill.com'[jboester@tuthill.com]; gerber\_gordon\_r@cat.com[gerber\_gordon\_r@cat.com]; 'Michele\_Calbi@swifttrans.com'[Michele\_Calbi@swifttrans.com]; 'Tracy Gahan'[tracy@caljet.com]; 'teundebruijn@greenchem-adblue.com'[teundebruijn@greenchem-adblue.com]; 'lee.mitchell@sscoop.com'[lee.mitchell@sscoop.com]; 'dsmith@terrainindustries.com'[dsmith@terrainindustries.com]; GKedzie@trucking.org[GKedzie@trucking.org]; robert.babik@gm.com[robert.babik@gm.com]; Teri Kowalski[teri.kowalski@tema.toyota.com]; Stuart Johnson[stuart.johnson@vw.com]; Simon, Karl[Simon.Karl@epa.gov]; Michael Potter[michael.a.potter@gm.com]; Walter Lewis[walter.lewis@porsche.us]; Greg Shank[greg.shank@volvo.com]; Larry Robertson[lar10@chrysler.com]; Roger Gault[rgault@emamail.org]; Richard Moskowitz[rmoskowitz@trucking.org]; Dale Kardos[dale.kardos@motorvehiclereg.com]; Matthew Kevnick[matthew.kevnick@tema.toyota.com]; Eric Schneider[eric.a.schneider@mbusa.com]; Edward Cohen[Edward\_Cohen@hna.honda.com]; Barbara Nocera[bnocera@mazdausa.com]; Anna-Maria Schneider[anna.schneider@vw.com]; Alyssa Werthman[awerthma@ford.com]; aschaeffer@dieselforum.org[aschaeffer@dieselforum.org]; Christine Lambert[clamber9@ford.com]; Anita Rajan[anita.rajan@na.mitsubishi-motors.com]; jeichberger@nacsonline.com[jeichberger@nacsonline.com]; John Cabaniss[jcabaniss@aiaa.org]; John Ruggie[jruggie@subaru.com]; Ed Kulik[ekulik@ford.com]; Joseph Kaufman[joseph.w.kaufman@conocophillips.com]; Fred Sciance[fred.sciance@gm.com]; Ichiro Sakai[Ichiro\_Sakai@ahm.honda.com]; Gregory Scott[gscott@npra.org];

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Ex. 6

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'g.vasauskas@achema.com'[g.vasauskas@achema.com];  
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kwiding@misco.com[kwiding@misco.com]; Susan Conti[sconti@autoalliance.org];  
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gbohlander@ppclubricants.com[gbohlander@ppclubricants.com];  
mark.vaughan@kingspanenv.com[mark.vaughan@kingspanenv.com];  
anpankey@ashland.com[anpankey@ashland.com]; rrenkes@pei.org[rrenkes@pei.org];  
ticeT@api.org[ticeT@api.org]; jkubsh@meca.org[jkubsh@meca.org];  
ddixon@oecfh.com[ddixon@oecfh.com]; richard.browne@gilbarco.com[richard.browne@gilbarco.com];  
megan.brownell@aucterus.com[megan.brownell@aucterus.com];  
nancy.somers@gm.com[nancy.somers@gm.com]; r.hewko@krusena.com[r.hewko@krusena.com];  
paolo.dimartino@gm.com[paolo.dimartino@gm.com];  
noel@dieselexhaustfluid.com[noel@dieselexhaustfluid.com];  
edeaton@amalgatech.com[edeaton@amalgatech.com]; s.uhlen@aucterus.com[s.uhlen@aucterus.com];  
t.katchmark@aucterus.com[t.katchmark@aucterus.com];  
jlounsbury@cfindustries.com[jlounsbury@cfindustries.com]; bstotler@natso.com[bstotler@natso.com];  
mark@dieselexhaustfluid.com[mark@dieselexhaustfluid.com];  
owen@dieselexhaustfluid.com[owen@dieselexhaustfluid.com];  
fcook@oldworldind.com[fcook@oldworldind.com];  
Margaret.Sullivan@paccar.com[Margaret.Sullivan@paccar.com];  
harmeningj@api.org[harmeningj@api.org]; ppicarie@astm.org[ppicarie@astm.org];  
mharris@mitfuso.com[mharris@mitfuso.com]; bmohr@mitfuso.com[bmohr@mitfuso.com];  
drthomas@cfindustries.com[drthomas@cfindustries.com];  
shanemsweet@gmail.com[shanemsweet@gmail.com];  
mark.casarella@us.bosch.com[mark.casarella@us.bosch.com]; jss@micro-matic.com[jss@micro-  
matic.com]; matthew.jenkins@gilbarco.com[matthew.jenkins@gilbarco.com];  
cculverhouse@oldworldind.com[cculverhouse@oldworldind.com];  
nakia.l.simon@chrysler.com[nakia.l.simon@chrysler.com]; tscott@trucking.org[tscott@trucking.org];  
katiep@mcchemical.com[katiep@mcchemical.com];  
alberto.febre@piusiusa.com[alberto.febre@piusiusa.com];  
walter.beroldi@piusiusa.com[walter.beroldi@piusiusa.com];  
john.rogers@agcocorp.com[john.rogers@agcocorp.com]; mpa@micro-matic.com[mpa@micro-  
matic.com]; Koury, Joe (jkoury@astm.org)[jkoury@astm.org]; jgallagh@astm.org[jgallagh@astm.org];  
jjeffers@thekag.com[jjeffers@thekag.com];  
rgribik@cwmenvironmental.com[rgribik@cwmenvironmental.com];  
bridget.m.revier@cummins.com[bridget.m.revier@cummins.com];

sgarney@trucking.org[sgarney@trucking.org]; james.hobday@integer-research.com[james.hobday@integer-research.com];  
joe.franklin@intertek.com[joe.franklin@intertek.com]; rebecca.shellim@integer-research.com[rebecca.shellim@integer-research.com];  
lindenjim@jlindenconsulting.com[lindenjim@jlindenconsulting.com];  
matthew.psota@cummins.com[matthew.psota@cummins.com]; dd1@micro-matic.com[dd1@micro-matic.com]; srowe@semmlerindustries.com[srowe@semmlerindustries.com];  
rohan.murphy@vicfuels.com[rohan.murphy@vicfuels.com];  
stephen.kirby@navistar.com[stephen.kirby@navistar.com];  
hurd\_stephen\_s@cat.com[hurd\_stephen\_s@cat.com]; Neil Whitbeck[nwhitbec@ford.com]; Chris Nevers[CNevers@autoalliance.org]; Ex. 6  
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**From:** Giedrius Ambrozaitis

**Sent:** Fri 1/3/2014 5:02:17 PM

**Subject:** SCR Stakeholder Group -- Special ISO Comment Meeting January 7 - RSVP requested  
DEF TF Recommended Changes ISO 22241-1-2-3 20131230.xlsx  
AUS32 Shelflife Study 18 month report.pdf  
SCR Stakeholder Mtg Agenda January 7, 2014.doc

This is a reminder notice for a special meeting of the SCR Stakeholder Group to collect and condense comments to ISO on changes to Parts 1, 2 and 3 of ISO Standard 22241.

If you are planning to attend in person, please RSVP in advance to Jeff Harmening of API ([harmeningj@api.org](mailto:harmeningj@api.org)).

Attached are the collated, proposed recommendations out of the API DEF Task Force Group along with some data to support some of the recommendations.

\*\*\*\*\*

The meeting will be held on January 7 2014 at 12:00 noon eastern at the American Petroleum Institute (API) offices in Washington DC (1220 L Street, NW, Washington, DC 20005-4070). An agenda is attached.

The conference call number will be 1-866-443-0059 with code 2026828233# .

The US representative to ISO is Zafar Shaikh, the head of SAE (Society of Automotive Engineers) Exhaust Aftertreatment and Emissions Committee (and also a powertrain manager at Ford). Zafar has requested that any and all recommended changes to Parts 1, 2 and 3 of ISO 22241 be submitted to him by January 15<sup>th</sup>. He further strongly recommends that any recommendations for changes to the current standards be substantiated with data and reasoning to support them.

The API Task Force will be meeting on December 20<sup>th</sup> to discuss changes. These changes will be brought forward into the January 7 SCR Stakeholder Group meeting and onto Zafar Shaikh and ISO.

If you or your company has recommendations for changes, please be sure to bring those changes with substantiation to either of these upcoming meetings.

A meeting date for the next regular meeting of the SCR Stakeholder Group meeting will be circulated shortly.

=====

The SCR Stakeholder Group (formerly called the Urea Stakeholder Group) is made up of industries, organizations and companies interested in urea for mobile source applications.

Participants include:

- Government (US Department of Energy, EPA)
- Automotive and heavy-duty engine and truck manufacturer trade associations
  
- Fuel retailer and truck stop trade associations
- Oil companies
- Urea distributors
  
- Petroleum dispenser manufacturers and associations

The main objectives of the SCR Stakeholder Group are:

- To exchange information with US government and other potential urea stakeholders on the potential market and need for urea availability.
- To consider effective education and outreach to consumers and commercial concerns about urea, its use and availability.
- To engage potential providers of urea availability to determine the conditions necessary for provision of retail availability before a profitable market exists.

If you have any questions concerning the SCR Stakeholder Group or the meeting, please call me at (248) 915-8836.

Sincerely,



Giedrius Ambrozaitis  
Director, Environmental Affairs  
Alliance of Automobile Manufacturers  
Tel. (248) 915-8836  
email: [gambrozaitis@autoalliance.org](mailto:gambrozaitis@autoalliance.org)

## ISO 22241-1:2006 Review and Recommended Revisions

Revision Draft 1

Last Revised 12-30-2013

Section	Recommended Revision
Introduction	<p>Propose deletion of any references to Brand Names such as AdBlue® as the markets, by world region, do not universally recognize that branding. Indeed, in North America there are now more than 55 unique brand names for AUS 32.</p> <p>Recommend deletion of all but paragraph 1 in the introduction.</p>
1 Scope	No comments
2 Normative References	<p>Recommend deleting references to ISO 3675 and ISO 12185 because we recommend deleting density as a parameter from Table 1 (to be discussed below).</p> <p>Recommend moving density to Annex A.2 Physical Properties (to be discussed below).</p>
3 Terms and Definitions	<p><b>3.1</b> No comments</p> <p><b>3.2</b> Recommend revising the definition for "Technically Pure Urea" to read: industrially produced grade of urea with only trace levels of contaminants, such that when blended with water to the final concentration of AUS 32, the requirements of Table 1 will be met.</p> <p>Recommend deleting the NOTE in 3.2</p> <p><b>3.3</b></p> <p>Recommend revision of the definition for Pure Water to read: Dilution water should be of sufficient purity such that when blended with technically pure urea, the Quality Characteristics of Table 1 are met.</p> <p>Recommend revision of the NOTE in 3.3 to read: Examples of Pure Water include water produced by distillation, de-ionization or reverse osmosis and water that meets the requirements of ISO 3696.</p>

**Proposed New 3.4** Recommend adding a Definition for the acronym **DEF** which is now recognized through North America and has been formalized by ASTM.

**Proposed New 3.5** Recommend addition of a definition for **Manufacturer** - "entity which produces AUS 32 finished product by dilution of virgin urea synthesis, dilution of concentrated urea solutions, solutionizing of solid urea or any other method of production."

**Proposed New 3.6** Recommend addition of a definition for **Production Control Plan** - Document that identifies the critical quality parameters required to be monitored and frequency that each control parameter and Quality Characteristic, as defined in Table 1, is to be measured. The frequency of monitoring shall be sufficient to ensure that the Quality Characteristics stated in Table 1 are continuously met.

#### **4 Designation**

Recommend, in addition to AUS 32 ISO 22241, that this section include, as an alternative, DEF ISO 22241.

#### **5 Requirements and testing**

Recommend revision of language to state: "The quality characteristics of AUS 32 are specified in Table 1 **and** they shall be continuously monitored by the manufacturer following a **documented Production Control Plan**.

Recommend revision of the sentence beginning with "Compliance with limits in Table 1..." to read "Compliance with the limits in Table 1 shall be verified by the test methods indicated or other methods validated by a recognized standards body. However, in the event of a dispute, the methods specified in Table 1 shall govern."

#### **6 Handling, transportation and storage**

Recommend deletion of Annex C (below) and, therefore, any references to that Annex in this section.

Recommend rewriting this section to state: "Requirements for handling, transportation and storage of AUS 32 are specified in ISO 22241-3."

## 7 Marking

Recommend inserting the word "Retail" at the beginning of the sentence.  
"Retail distribution pumps and containers....."

### Table 1

Recommend deleting **Density at 20 °C** and moving the parameter to Annex A.2.

Recommend deleting **Identity** and moving the parameter to Annex A.1.  
Note 2 - Recommend deleting references to density in this note.

Footnote b - delete and rename the remaining footnotes.

### Annex A

Recommend addition of **Identity** (ISO 22241-2, Annex J) to A.1.

Recommend addition of **Density at 20 °C** to Annex A.2 as follows:  
Density (at 20 °C): 1087.0 - 1093.0 kg/m<sup>3</sup>

### Annex B

Recommend deleting both rows of Density Characteristics

Recommend Deleting Note 1  
Renummer Note 2 to Note. Remove words "all other".

### Annex C

Recommend deletion of Annex C as it is covered in ISO 22241-3.

### Bibliography

Recommend adding references to ISO 4259  
Recommend adding references to ISO 22241-2  
Recommend adding references to ISO 22241-3



## CF Commentary

## Additional Commentary

AdBlue is a trademark and brand requiring license fees. It is not universally recognized as AUS 32 and references to *ANY* branding should be avoided in the standard.

AdBlue is a trademark and brand requiring license fees. It is not universally recognized as AUS 32 and references to *ANY* branding should be avoided in the standard.

To be discussed below.

To be discussed below.

The limits for contaminants to be measured are already defined in table 1. Furthermore, as there are no limits established for sulfur compounds, chlorides and nitrates, and neither are there analytical methods proposed for quantifying these 3 parameters, it is improper to establish a criteria of "Free of Contaminants."

If the committee feels that contaminants such as a sulfur compounds, chlorides and nitrates are of enough concern to mention them in the standard, then limits should be established for them along with appropriate analytical methods for quantifying them.

The standard should ensure that water used to formulate AUS 32 will generate a product meeting the quality characteristics of Table 1, not that it meets a particular ISO Water definition.

References to ISO 3696 should be by example only and not prescriptive.

DEF has been formally defined by ASTM D7821-12 as "preparation of aqueous urea [(NH<sub>2</sub>)<sub>2</sub>CO], containing 32.5% by weight of technically pure urea in high-purity water with the quality characteristics defined by ISO 22241."

Additon of a definition for **Manufacturer** is needed to clarify confusion in the marketplace. Section 5 of this standard imposes quality-monitoring requirements on the manufacturer and some "blenders" of concentrated urea solutions. "Solutionizers" of solid urea do not see this as applicable to them becasue they are not the "manufacturer" of the virgin urea.

The "valid testing plan" language in section 5 of this standard is vague and we recommend replacement with a definition for Production Control Plan as offered.

AUS 32 is not universally recognized. Indeed, DEF has become the product label most commonly recognized in North America.

See discussion of Proposed New 3.6 above.

Standardized test methods for analysis of AUS 32 are being developed and published by standards bodies such as ASTM. These alternate methods offer greater flexibility to manufacturers and distributors of AUS 32 in the marketplace without compromising product quality.

ISO 22241-3, which had not be published at the time ISO 22241-1 was published, is now available and Annex C is therefore redundant. Managing the consistency between the Annex C and ISO 22241-3 is unnccessary.

Same as above.



This "marking" requirement is unnecessary at the Urea Manufacturing level, and probably unnecessary at the AUS 32 Manufacturing level. It may, however, serve to prevent contamination errors by the consumer at the retail level. AUS 32 pumps at travel centers should be clearly marked so that consumers will not assume the fluid is Diesel Fuel.

Density is not a control parameter and is not used to quantify AUS 32 concentration. It is a physical property of the fluid that is dependent on the concentration of urea in water just as viscosity is. It should be moved to Annex A.2.

FTIR Identity is not a control parameter, is not used to quantify AUS 32 concentration and is not of sufficient sensitivity to detect the ppm levels of the contaminants in Table 1. It should be used to describe the fluid in Annex A.1.

See above recommendation to remove **Density at 20 °C** from table of Quality characteristics.

Footnote b applies to **Density at 20 °C**. See above recommendation to remove **Density at 20 °C** from table of Quality characteristics.

Identity is not a Quality Characteristic of AUS 32 but should be included as a Chemical Description in Annex A.1.

Density is not a control parameter and is not used to quantify AUS 32 concentration. It is a physical property of the fluid dependent on the concentration of urea in water just as viscosity is. It should be moved to Annex A.2.

Density is not a control parameter and is not used to quantify AUS 32 concentration. It is a physical property of the fluid dependent on the concentration of urea in water just as viscosity is. It should be moved to Annex A.2.

See above.

See above.

ISO 22241-3, which had not been published at the time ISO 22241-1 was published, is now available and Annex C is therefore redundant. Managing the consistency between the Annex C and ISO 22241-3 is unnecessary.



## ISO 22241-2 Review and Recommended Revisions

Revision Draft 1

Last Revised 12-30-2013

Section	Recommended Revisions
1 SCOPE	None
2 Normative References	Recommend deletion of reference to ISO 12185 : Density
3 Specifications	Recommend deletion of statement "Determination of density shall be conducted in accordance with ISO 3675 or ISO 12185."
4 Sampling	None
5 Precision and Dispute	None
Annex A Sampling	
A1 General	None
A2 Principle	Paragraph 2: Recommend deleting "...and which minimize the risk of algae or bacteria growth."
A3 Possible Contaminants	None
A4 Apparatus	
A.4.1 Sampling Bottles	Paragraph 1: Delete statement: "In case of dispute, PFA bottles should be used."
A.4.2 Labels	None
A.5 Sampling	Paragraph 2: Recommend deleting "...and kept away from daylight to prevent growth of algae."
A.6 Sample quantity	None
A.7 Labeling	None
Annex B Determination of Urea Content by Total Nitrogen	None

**Annex C Refractive Index and** Recommend revisions shown in separate tab.

**Determination of urea  
content by Refractive Index**

**Annex D Determination of Alkalinity** No comments - other than to point out that in 2008, a Correction to this Annex was issued for D.5.4, in which 0.1 mol/L hydrochloric acid was corrected to say, "0.01 mol/L".

**Annex E Determination of  
Biuret Content**

**E.1 General** No comments

**E.2 Principle** Recommend correcting the spelling of "Tartrate" as it is misspelled.

**E.3.3 Spectrophotometer** Recommend revising to state, "for use at 550 nm with a 10-50 mm cell"

**E.4 Chemicals**

**E.4.1** Recommend specifying water quality as "Distilled or De-ionized Water, conductivity less than 0,5 mS/m according to ISO 3696 grade 3."

**E.4.2** Recommend deleting this chemical

**E.4.3** None

**E.4.4** None

**E.4.5** None

**NEW E.4.6** Standard acid, 0.1N Hydrochloric or sulfuric acid

**E.5 Procedure**

**E.5.1**

Recommend revision of Paragraph 1 to state: "Spectrophotometric measurements are only suitable for clear solutions. If the sample is not clear, filter through a 0.45 µm filter to get a clear solution." Revise Paragraph 3 to state: "To eliminate ammonia content greater than 500 mg/kg, neutralize pre-weighed sample to less than 7.0 pH with standard acid."

## E.5.2

	Paragraph 3: Revise "50 mm cell" to "10-50 mm cell."
E.5.3	None
E.5.4	None
E.5.5 Measurement	Paragraph 1: Replace with "Weigh, to the nearest 0,01 g, 100 g of the test sample in a 250 ml beaker. Neutralize to below 7.0 pH with standard acid. Quantitatively transfer sample to 250 ml volumetric flask. Fill the flask to the mark with demineralized water and mix thoroughly."

E.6 Results None

E.7 Precision None

E.8 test Report None

### Annex F Determination of Aldehyde Content

None

### Annex G Determination of Insoluble Matter content by Gravimetric Method

None

### Annex H Determination of Phosphate content by photometric method

None

### Annex I Determination of trace element content by ICP-OES method

Recommend adding the element phosphorus (P) to the list of elements in the title

I.1 Recommend adding the element phosphorus (P) to the list of elements

I.2 None

I.3 None

I.4 None

#### I.5 Procedure

I.5.1 None

I.5.2 None

I.5.3 None

#### I.5.4 Determination

Recommend revision of "Shall" to "Should" in the statement "For emission measurements, the wavelengths specified in Table I.3 should be used."

Table I.3 Add this wavelength to those for K: 769.90

Add P to table with following wavelengths: 178.22 or 185.88 or 213.62

**I.6.1 Calculation** Recommend adding to this section the language: "Conversion of the measure Phosphorus content to Phosphate (PO<sub>4</sub>) by multiplying by the factor 3.0662.

**Table I.4** Recommend adding Element P to this list. Repeatability and Reporducibility to be established later.

**Annex J Determination of Identity by FTIR** Recommend deleting this entire annex

**Annex K Precision of Test methods** Recommend deleting both rows for Density methods










We are recommending that **Density at 20 °C** be moved from Table 1 of ISO 22241-1 to Annex A.2 of ISO 22241-1. Density is not a control parameter and is not used to quantify AUS 32 concentration. It is a physical property of the fluid dependent on the concentration of urea in water.

We are recommending that **Density at 20 °C** be moved from Table 1 of ISO 22241-1 to Annex A.2 of ISO 22241-1. Density is not a control parameter and is not used to quantify AUS 32 concentration. It is a physical property of the fluid dependent on the concentration of urea in water.

There is no other mention of the risks of algae or bacteria growth in ISO 22241. USCAR commissioned a study which demonstrated that Bacteria and Algae will not grow in AUS 32 in either aerobic or anaerobic conditions in both dark or light storage environments. This language should be deleted.

There is no reason given for this statement. Statement also says "should," not "shall." To date, HDPE has proven to be bottle of choice by industry due to cost, availability and demonstrated compatibility.

There is no other mention of the risks of algae or bacteria growth in ISO 22241. USCAR commissioned a study which demonstrated that Bacteria and Algae will not grow in AUS 32 in either aerobic or anaerobic conditions in both dark or light storage environments. This language should be deleted.



See separate tab.

editorial

A 50 mm cell is very fragile and expensive to replace when broken. A 10 mm cell, however, is much more rigid and the lower path length does not compromise the sensitivity needed to quantify biuret in the ranges specified. We recommend allowing the lab to chose the best path length cell for their specific instrument in the 10 to 50 mm range.

This chemical will not be required if the Rotary Evaporator step is eliminated. Neutralizing free ammonia in urea by use of a standard acid is the accepted method throughout the fertilizer industry. It is a much less expensive option as compared to the rotary evaporator and greatly reduces the time necessary to complete the test.

Required to neutralize ammonia in E.5 revisions (below).

Neutralizing free ammonia in urea by use of a standard acid is the accepted method throughout the urea manufacturing industry. It is a far less expensive option than the rotary evaporator and greatly reduces the time needed to complete the test. See British Standard BS EN 15749:2009.

A 50 mm cell is very fragile and expensive to replace when broken. A 10 mm cell, however, is much more rigid and the lower path length does not compromise the sensitivity needed to quantify biuret in the ranges specified. We recommend allowing the lab to chose the best path length cell for their specific instrument in the 10 to 50 mm range.

Neutralizing free ammonia in urea by use of a standard acid is the accepted method throughout the urea manufacturing industry. It is a far less expensive option than the rotary evaporator and greatly reduces the time needed to complete the test. See British Standard BS EN 15749:2009.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

ICP-OES is widely used to quantify Phosphorus (and then calculate  $\text{PO}_4$ ) levels in aqueous urea solutions.

ICP-OES is widely used to quantify Phosphorus (and then calculate  $\text{PO}_4$ ) levels in aqueous urea solutions.

Implication is that no other standard lines for elements are applicable

Applicable wavelengths

ICP-OES is widely used to quantify Phosphorus (and then calculate  $\text{PO}_4$ ) levels in aqueous urea solutions. Applicable wavelengths provided.

Convert P to  $\text{PO}_4$  by the conversion factor for reporting as Phosphate as required in ISO 22241-1.

Repeatability and Reproducibility can be established by round robin testing.

FTIR for the purposes of quantifying product quality is not sufficiently sensitive to quantify sub-ppm levels of contaminants. It is recommended to remove the method altogether.

We are recommending that **Density at 20 °C** be moved from Table 1 of ISO 22241-1 to Annex A.2 of ISO 22241-1. Density is not a control parameter and is not used to quantify AUS 32 concentration. It is a physical property of the fluid dependent on the concentration of urea in water.









Section	Recommended Revision
<b>C.1 General</b>	<ol style="list-style-type: none"> <li>1. Add reference that refractive index is measured relative to "air".</li> <li>2. Add reference that refractive index is measured at a reference wavelength of 589.3 nm.</li> <li>3. Expand measurement range to 0 to 51% m/m.</li> </ol>
<b>C.2. Principle</b>	<ol style="list-style-type: none"> <li>1. Add "...the concentration of urea in an aqueous solution at a defined temperature" and wavelength.</li> <li>2. Replace, "The content is determined by means of a reference curve. NOTE The method specified in this annex is based on ISO 5661." with, "<u>The content is determined by comparison to the agreed upon mathematical relationship between AUS 32 concentration and refractive index as presented here in table form.</u>" (or agreed upon equation)</li> </ol>
<b>C.3 Apparatus</b>	
<b>C.3.1</b>	<ol style="list-style-type: none"> <li>1. Replace section C.3.1 with, "Refractometer, capable of measuring refractive index at a reference wavelength of 589.3 nm, with a measuring range of at least 1,330 00 to 1,414 00, and a resolution 0,000 01, with means of controlling or compensating temperature to a reference temperature of 20 °C."</li> <li>2. NOTE Different types of refractometers are available on the market. The resulting various resources and modes of operation are not an object of this part of ISO 22241. Rather, operation should be based on the respective operation manuals."</li> </ol>
<b>C.3.2 to C.3.6</b>	Delete subsection C.3.2 through C.3.6.
<b>C.4. Chemicals</b>	

**C.4.1**  
**C.4.2 to C.4.3**

Add distilled water  
Replace these two sections with, "C.4.2 - Series of Refractive Index Calibration Standards traceable to a National Measurement Institute (NMI).

**C.5 Procedure**

**C.5.1 General**

Move, "NOTE Different types of refractometers are available on the market. The resulting various resources and modes of operation are not an object of this part of ISO 22241. Rather, operation should be based on the respective operation manuals." to Section C.3.1.

**C.5.2 Reference Curve & Evaluation Factor**

Replace this section with the following,

"Refractometer Calibration - The refractometer shall be first zero-set to distilled or deionized water at 20 °C [ $\pm 0,1$  °C], following the instructions provided by the refractometer manufacturer.

The refractometer shall next be calibrated using a series of refractive index calibration standards, of the type and values recommended by the refractometer manufacturer, and traceable through an unbroken chain to a National Measurement Institute or recognized international authority.

After completion of calibration, the refractometer shall be marked or tagged with the date of the calibration and a date the next calibration is due. The refractometer should have a complete calibration at least once every 30 days."

**C.5.3 Check Instrument**

Replace this section with, "Refractometer Verification - The instrument function shall be verified weekly using water and at least one traceable reference standard, other than water, with a value greater than or equal to the refractive index of 32.5% m/m AUS 32.

If the refractive index of the standard, as read on the refractometer, deviates by more than 0,000 05 from the expected value, then recalibrate the refractometer according to Section C.5.2.

If afterwards the desired value is not attained, then the instrument shall be disabled for further measurements and the manufacturer's service representative should be called.

**C.5.4 Sample Prep and Measuring**

1. Change temperature requirement to 20 °C  $\pm 0,1$ °C.

2. Sample should be measured five times and then use the arithmetic mean of the five values.

3. If any two of the five measurements deviate by more than 0,000 05 nD20 then the measurement should be repeated.

## C.6 Results

### C.6.1 Calculations

1. Delete existing equation.
2. Replace it with the urea concentration, relative to the refractive index measurement, as determined through an agreed upon table or equation.
3. Urea concentration = Urea Concentration - Biuret content, where Biuret content has been determined according to Annex E.

### C.6.2 Expression of Results

1. Delete reference to two measurements.
2. Refractive index value obtained in C.5.4 shall be rounded to four decimal places and marked as "nD20."
3. Urea concentration determined in C.6.1 shall be rounded to one decimal place and marked as % (m/m).

### C.7 Precision

To be determined through interlaboratory testing in accordance with ISO procedures.

### C.8 Test Report

None.

1. The absolute refractive index of a medium is described as the ratio of the speed of light in a "vacuum" relative to the speed of light in that medium. However, it is more common to describe it as the ratio of the speed of light in "air" relative to the speed of light in the medium. In the case of ISO 22241, it should be noted that the method is in fact measuring refractive index relative to air.

2. The refractive index of a solution varies by the fluid's concentration, temperature, and the wavelength of light used to measure it. To be meaningful, refractive index measurements need to be referenced to a temperature and wavelength. Although Annex C requires measurements to be made at 20.0°C, there is no specification for controlling or reporting the wavelength of measurement. Refractive index measurements are typically referenced to the Sodium D line, which is 589.3 nm.

3. The reality of the current commercial environment occasions bulk shipment of urea at 50% m/m, intended for later dilution. Likewise, new standards for Marine DEF at 40% m/m fall outside the measurement limits of the current refractometer method. The method should be expanded to include measurements up to at least 50% in order to be relevant to today's business climate. This can be easily accomplished through the use of an agreed upon table or equation relating refractive index to urea concentration.

1. Refractive index is dependent on both temperature and wavelength.

2. It is recommended that the readings from the refractometer be compared to an ISO approved table or equation-of-state relating refractive index values to urea concentration. All references to the existing reference curve should be deleted.

1. Statement better describes apparatus necessary for method.

2. Moved from Section C.5.1.

These section are no longer needed.

Distilled or De-ionized water are equally acceptable.

The refractometer must be calibrated in a manner which follows the device manufacturer's instructions for calibration and must use only calibration solutions traceable to a National Measurement Institute (NMI) or a recognized international authority which provides the highest level of standards for the calibration / measurement traceability within a country. The calibration standards should have an uncertainty five to ten times greater than the intended uncertainty of measurement where possible.

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The current reference curve and evaluation factor are not necessary providing, (1) the refractometer is calibrated with traceable reference materials, and (2) a table or equation-of-state is made part of this standard that relates refractive index values to urea concentration.

It is still important to verify that the refractometer is in calibration. However, this can be accomplished more easily by using traceable reference standards as opposed to creating ones own standards.

1. Controlling temperature to  $\pm 0.02^{\circ}\text{C}$  would require that the temperature measurement sensor in the refractometer be capable of its own traceable temperature calibration. Not only is this requirement beyond the capabilities of nearly all commercial laboratory refractometers but it has little actual effect on urea measurement accuracy. For example, a temperature change of  $0.1^{\circ}\text{C}$ , at 32.5%, would change concentration by only about 0.012%. Therefore, the temperature requirement should be changed to  $\pm 0.1^{\circ}\text{C}$ .

2. The arithmetic mean of five readings will be more accurate than just two readings and will not significantly increase the time burden on the user.

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1. Providing that an agreed upon table or equation is used, the existing calculations can be greatly simplified.

[REDACTED]

[REDACTED]

## ISO 22241-3 Review and Recommended Revisions

Revision Draft 1

Last Revised 12-30-2013

Section	Recommended Revision
Introduction	<p>Propose deletion of any references to Brand Names such as AdBlue® as the markets, by world region, do not universally recognize that branding. Indeed in North America there are now more than 55 unique brand names for AUS 32.</p> <p>Recommend deletion of all but paragraph 1 in the introduction.</p>
1 Scope	None
2 Normative References	None
3 Terms and Definitions	<p>3.1 None</p> <p>3.2 None</p> <p>3.3 None</p> <p>3.4 None</p> <p><b>Proposed New 3.5</b> Recommend addition of a definition for <b>Manufacturer</b> - "entity which produces AUS 32 finished product by dilution of virgin urea synthesis, dilution of concentrated urea solutions, solutionizing of solid urea or any other method of production."</p> <p><b>Proposed New 3.6</b> Recommend addition of a definition for <b>Production Control Plan</b> - Document that identifies the critical quality parameters required to be monitored and frequency that each control parameter and Quality Characteristic, as defined in Table 1, is to be measured. The frequency of monitoring shall be sufficient to ensure that the Quality Characteristics stated in Table 1 are continuously met.</p>
4 General Requirements and Recommendations	<p>4.1.1 Recommend this additional language: "When selecting materials for compatibility testing the user should consider the both the urea and ammonia content of the fluid as potential sources of material corrosion and/or degradation."</p>



**4.1.2 Table 1** Recommend deletion of Polyvinylidene fluoride (PVDF)

**4.1.2 Table 1** Recommend the Addition of EPDM

**4.1.3 Table 2** Recommend the Addition of Viton, Buna-N, PVDF and PVC

## 4.2 Physical conditions during transportation and storage

**4.2.1** Recommend revision of language in first bullet point to state,  
"...prolonged transportation or storing above **30 °C** should be avoided."

**4.2.1** Recommend revision of Note 2 to state: "Transient exposure to  
temperatures above 30 °C does not necessarily influence the quality of  
AUS 32, but continuous storage at temperatures above 30 °C, for  
example, for periods greater than 6 months, may increase the alkalinity  
of the fluid to levels that exceed the specifications in ISO22241-1."

**4.2.2** Recommend NOTE (a) in Table 2 be revised to say: "...storage above 30 °C  
should be avoided."

**4.3** None

**4.4** None

## 5.0 Quality Assurance

**5.1 General** Recommend that paragraph 1 in 5.1 be amended to state: "...or the date  
of the last certification or that the batch number be traceable to a  
production date."

### 5.2 Bullet Point 3

For Bullet Point 3, it is recommended that the statement be revised to  
state: "After loading of any means of bulk transportation at the  
production site, a sample should be taken that is representative of the  
filled container. This should be done according to a written standard  
operating procedure that ensures the sample taken is representative.  
The Manufacturer is responsible for ensuring, by analysis in accordance  
with ISO22241-2, that the AUS 32 meets the requirements of ISO 22241-  
1."

**5.2 Bullet Point 5** For Bullet Point 5, it is recommended that the statement be revised to state: "Any AUS 32 package or conveyance which has been stored for a period of time in conditions that exceed those described in Table 3 should be tested by analysis to determine if the quality of the material meets the requirements of ISO 22241-1."

**5.2 Bullet Point 6 (NEW)** Recommend addition of a NEW Bullet point (6) for this section stating: "Production retain samples shall be maintained for a minimum of 1 year from the date of collection in a storage environment between 12 °C and 30 °C."

**5.3 Testing** Recommend adding of the following to end of paragraph 1: "Production analysis data shall be maintained for a minimum of the current year plus 4 years, consistent with 5.5.3."

**5.4 Procedures for product release and handling of non conforming product** Recommend that paragraph 3 be revised to state: "To re-enter the distribution chain, the product quality shall be *determined by analysis in accordance with ISO 22241-2* that the quality standards defined in ISO 22241-1 are fulfilled."

## **5.5 Quality Monitoring**

**5.5.1** Recommend adding the following additional language to paragraph 1: "....should supply a quality certificate (e.g. a certificate of compliance with the order or test report, which includes the following parameters at a minimum; Urea Concentration, Alkalinity and Refractive Index."

**5.5.1** Recommend revising paragraph 3 of 5.5.1 to state: "A typical parameter used to determine product identification is Refractive Index, as it is used to calculate Urea Concentration."

**5.5.1** Recommend revising paragraph 4 of 5.5.1 to state: "A minimum contamination test should consist of an examination of product color and suspended solids. While there are no official test methods specified for these and no limits established, identification of other-than-water-white color and the presence of suspended solids in AUS 32 should alert the users of the possibility of contamination." Alternatively, this paragraph could be deleted.

**5.5.1** Recommend deleting paragraph 5 of 5.5.1.

**5.5.2 Audits** Recommend addition of this language to paragraph 1: "Manufacturers shall conduct an audit of their production control plans at least once every 2 years."

**5.5.3** Recommend paragraph 2 be amended to state: "Quality documents shall be maintained for the current year plus 4 years."

## **6 Procedures for Handling of Containers and Equipment**

**6.1** Bullet 1: Recommend replacing "should" with "shall" and revising sentence 2 to read , "....cleaned and proven clean (see 6.4) for use with AUS 32 *by analysis of last rinsate in accordance with test methods specified in ISO 22241-2.*"

**6.1** Bullet 4: Recommend replacing "should" with "shall".

**6.2** Bullet 1: Recommend amending with the statements: "....an identification label or stamp *which includes a batch number*, so that its...."

**6.2** Bullet 3: Recommend revising last sentence to read: "The sample should be kept as a retention sample *for a minimum of 1 year.*"

**6.2** Bullet 4: Recommend deleting this bullet in its entirety.

**6.3** Paragraph 1: Recommend inserting this language: "Means of bulk operation which are *currently certified as clean and* exclusively used for transportation..."

**6.3** Paragraph 1: Recommend addition of the statement to end of paragraph: "It may be necessary to use tamper-evident seals to document that bulk containers have remained clean between AUS 32 services and to validate that tampering of the AUS 32 bulk container has not occurred."

### **6.3**

Paragraph 2: Recommend revising last sentence to read: "...for loading or unloading *and should be retained for a minimum of 1 year.*"

**6.3** Bullet point 2: Recommend addition of the statement: " This certificate of cleanliness must confirm results of rinsate analysis in accordance with parameters specified in ISO 22241-1 by methods described in ISO 22241-2.

- 6.3** Final Paragraph of the section, Recommend following amendment:  
"....filled bulk compartment should be analyzed *in accordance with methods described in ISO 22241-2* to clarify the problem...."
- 6.4** Paragraph 1, first sentence: Recommend adding the language: "...cleaned prior to use with AUS 32 *so that no contaminants will be present.*"
- 6.4** Paragraph 2, first sentence: Recommend adding the language: "...cleaned prior to use with AUS 32 *so that no contaminants will be present.*"

## CF Commentary

## Additional Commentary

AdBlue is a trademark and brand requiring license fees. It is not universally recognized as AUS 32 and references to *ANY* branding should be avoided in the standard.

AdBlue is a trademark and brand requiring license fees. It is not universally recognized as AUS 32 and references to *ANY* branding should be avoided in the standard.

Additon of a definition for **Manufacturer** is needed to clarify confusion in the marketplace. Section 5 of this standard imposes quality-monitoring requirements on the manufacturer and some "blenders" of concentrated urea solutions. "Solutionizers" of solid urea do not see this as applicable to them becasue they are not the "manufacturer" of the virgin urea.


The "valid testing plan" language in section 5 of this standard is vague and we recommend replacement with a definition for Production Control Plan as offered.

We are aware that many materials compatibility charts from reference publications will show that urea is compatible with a given metal or plastic material. In fact, AUS 32 is corrosive to some materials, not because of the urea content, but because of the dissolved ammonia content of the AUS 32. For example, Viton and many 400-grade steel materials show rapid degradation when in contact with AUS 32.

This material has been shown to become discolored and brittle in the presence of AUS 32.

This material has been shown to be compatible with AUS 32.

Viton, Buna-N and PVDF have been shown to be incompatible with AUS 32. PVC is material that holds up mechanically but is known to leach chlorides into the fluid.



AUS 32, as shown in table 3, has a shelf life of 12 months at 30 °C, which is confirmed by testing. Even at 40 °C, in continuous temperature incubation, AUS 32 shelf life is 2-3 months depending on the starting alkalinity level. Transient storage above 30 °C will not affect product quality during transportation and storage. The current language recommends 25 °C which is unrealistically low in the supply chain.

Incubation data is provided to support this recommendation.

Same reasons as 4.2.1



It should not be necessary to have a "born on date" on a package as long as the manufacturer/packager can trace the batch/lot code on the package to a product lot and production date for the purposes of pulling a retain sample representative of that package.

The last sentence of bullet 3 does not make sense. It should emphasize that sampling and analysis of Lots meet the requirements of the ISO 22241-1 standard. Furthermore, this example seems to require that the ACTUAL conveyance be sampled, which, in reality, may not be possible. The sampling of a production batch tank should be sufficient to determine that product being loaded into a conveyance meets the quality requirements.

The intention is to require the recertification of AUS32 which has been stored at high temperatures for a period of time that exceeds the shelf life as defined in Table 3. The most important analytical parameter which should be tested is Alkalinity.

Retain samples must be maintained for a least 1 year. To ensure that retain samples do not deteriorate, they must be maintained in a temperature-controlled environment.

Intent is to ensure that production analysis data is maintained for 5 years, as mandated in current 5.5.3.

Proposed statement would provide clarification that testing by the approved standard methods is required.

The standard is unclear with respect to which quality characteristics from ISO 22241-1 must or should be included on the Manufacturer's Quality Certificate. At a minimum, Urea Concentration calculated from Refractive Index should be provided so that Buyers know they are getting the correct urea concentration AND alkalinity should be included as that is the *SINGLE MOST IMPORTANT* parameter for determination of shelf life. Other parameters can be included but are only indicative of trace levels of contamination.


Density is a physical property of the fluid which may or may not be indicative of product identification and, in the market place, is rarely used at the buyer level. Refractive Index, however, has become the most commonly used method for identifying the fluid as AUS 32 and not some other automotive fluid.

We recommend deletion of any recommendation for a user to smell the product as this may pose a health risk to some individuals. Alternatively, we recommend deletion of this entire paragraph because there is no specification for the minimum contamination limits and there are no test methods identified in the standard to support them.

We recommend deletion of this entire paragraph because there is no specification for the minimum contamination limits and there are no test methods identified in the standard to support them.

Intention is to ensure that Manufacturers submit to audits that examine production control plans.

Clarifies the requirement to maintain records in accordance with ISO Standards.



Clarifies responsibility of the equipment operator and the methods required to "prove" the equipment is clean.

One of the greatest opportunities for cross-contamination of AUS 32 with other automotive fluids is multi-use hoses. We believe "shall" statements should be used in reference to dedicated hoses for AUS 32.

The label on a non-bulk container for single use should have a traceable batch code on it.

Consistent with our recommendation in 5.2

Containers should be sealed regardless of design.

It should be clarified that only bulk containers KNOWN to be clean do not need to be cleaned prior to loading with AUS 32 and that others, not previously certified to be clean, will require a cleaning to certify them for AUS 32 use.

Encourages the use of tamper-evident seals.

Establishes a retention period for loading checklists.

Establishes a criteria for qualifying "cleanliness" of bulk containers.



Clarifies the analytical methods used to analyze for potential contaminants.

Clarifies the reason for "cleaning".

Clarifies the reason for "cleaning".

**Agenda**  
**Special SCR Stakeholder Group Meeting**  
**January 7, 2014**

Location:

**American Petroleum Institute**

1220 L Street, NW Washington, DC 20005-4070

Conference call number (for all meetings):

1-866-443-0059 with code 2026828233#

Agenda

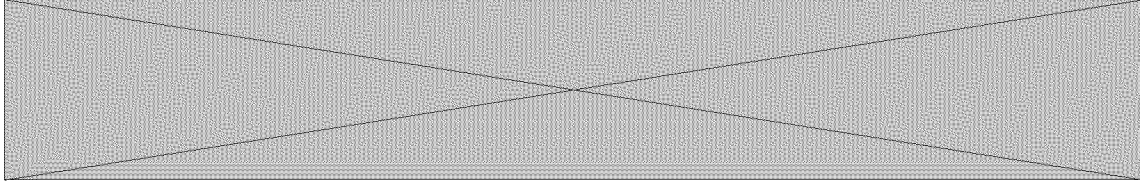
**Lunch - 11:30 am Eastern**

**Special SCR Stakeholder Group Meeting (12:00 pm - 3:00 pm)**

<b>1. Introduction/Roll Call/Antitrust</b>	Harmening/Ferrick/Ambrozaitis	1 min
<b>2. Recommended changes to Parts 1, 2 and 3 of ISO 22241</b>  - Changes from Dec 20 API Task Force meeting - Other new changes - Collate changes in to document for Zafar Shaikh <b>SAE for ISO</b> - Next steps	Harmening/Thomas	3 hours

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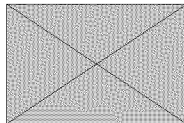
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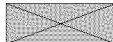
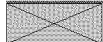
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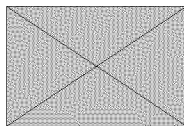
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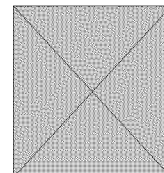
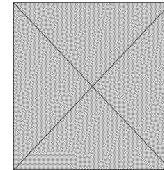
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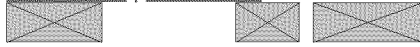
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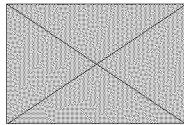
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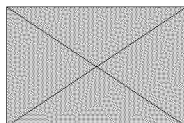
In their third full year of sales, more plug-in electric cars were sold in the U.S. than ever before. The 2013 total of roughly 90,000 electric vehicles didn't quite double the 2012 total of about 53,000, but with 16 different plug-in cars offered for sale as of this month, the numbers seem likely to grow again this year. And last year's total was...

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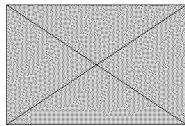
The fate of Fisker Automotive is back in court after a flurry of legal moves by various parties to the bankruptcy. A court hearing is scheduled for Friday, January 10, to determine whether the bankrupt Fisker Automotive will be sold to a Hong Kong investment group or to Wanxiang, China's largest auto-parts maker. The hearing had been scheduled for...

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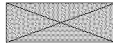
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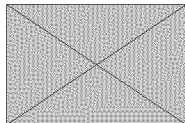
Apparently, solar panels are a lot like plants. Just as some people believe plants respond well to music, solar panels seem to perform better when "listening," according to a study by London's Imperial College. The study found that sounds can increase solar panels' output, as long as the constituent cells have the right stuff. The study's authors...

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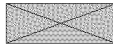
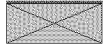
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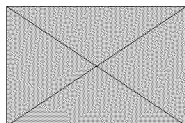
Diesel may be taking a while to catch on in the U.S, but in India the diesel market has exploded in recent years. It's no surprise that automakers have been making the most of this, and the latest to do so is Tata, whose Nano--the world's cheapest new car--is soon to get its own diesel option. According to CarDekho (via Autoblog), the car will...

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Volkswagen won't be offering its e-Up electric car in the U.S, but with small dimensions and that clean electric drivetrain, it could be the ideal city car for European buyers. Even range doesn't matter that much when you're driving around the city, but Volkswagen recognizes that some drivers may need to head further afield. Like some other...

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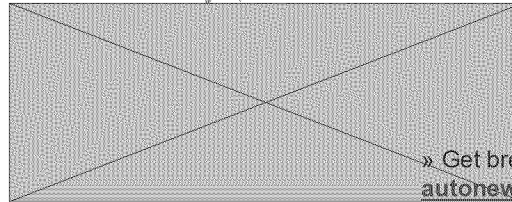
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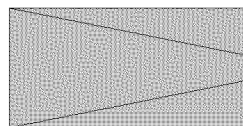
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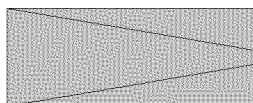
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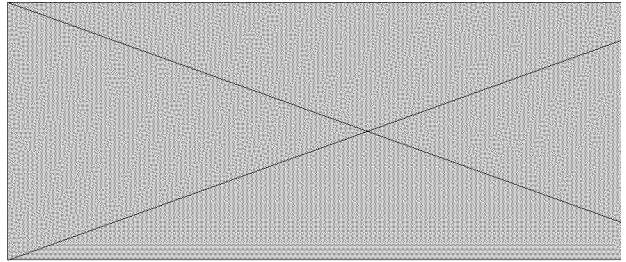
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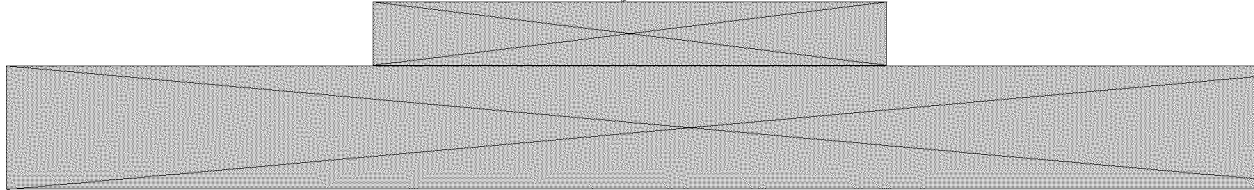
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**From:** Automotive News  
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**Subject:** U.S. SALES REPORT: Flat December fails to tarnish 'another great year for auto sales' | What was hot and cold in 2013

January 3, 2014



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## **Flat December fails to tarnish 'another great year for auto sales'**

2:32 pm U.S. ET | Jan 3

Despite flat December volume, the U.S. industry closed out 2013 with 15.6 million light-vehicles sales, the fourth straight year with a gain of a million or more units. ...

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### **ON THE BLOGS**

**JESSE SNYDER**

**3 things we learned  
from December sales**

## **What was hot, cold in 2013**

2:32 pm U.S. ET | Jan 3

Small crossovers and big pickups soared in 2013, as the two segments combined to account for one of every four vehicles sold. But growth in the compact and mid-sized car segments slowed significantly, and minivan sales declined.

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## **GM share slips in '13 as Dec. sales, pickups fall**

2:32 pm U.S. ET | Jan 3

## **Toyota ends 2013 down while Lexus rises**

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## **F series, Fusion drive Ford gains**

2:11 pm U.S. ET | Jan 3

## **New capacity helps Nissan roll to records**

2:32 pm U.S. ET | Jan 3

## **Subaru's latest record: a 26% jump in 2013**

1:34 pm U.S. ET | Jan 3

## **Jeep Cherokee, Ram ProMaster propel Chrysler**

12:36 pm U.S. ET | Jan 3

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## **Audi, Porsche set U.S. records for 2013; VW sinks**

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12:46 pm U.S. ET | Jan 3

## **Mercedes outlasts BMW's late surge to grab U.S. luxury crown**

3:38 pm U.S. ET | Jan 3

## **Canada sales highest in decade; Ford still tops**

2:22 pm U.S. ET | Jan 3

## **U.S. sales barely rise as storms, Nov. payback take toll**

8:00 am U.S. ET | Jan 3

### **WINNERS AND LOSERS**

% change in sales among brands from December 2012

Winners	Dec.	Winners	12 mos.	Losers	Dec.	Losers	12 mos.
1 Maserati	216.2%	1 Maserati	74.7%	1 Volkswagen division	-22.7%	1 Volvo	-10.1%
2 Mitsubishi	56.2%	2 Jaguar	41.1%	2 Scion	-21.7%	2 Smart	-7.4%
3 Jaguar	47.2%	3 Subaru	26.2%	3 Chrysler Division	-20.6%	3 Scion	-7.1%
4 Jeep	33.6%	4 Ram	22.2%	4 Volvo	-20.5%	4 Volkswagen division	-6.9%
5 Mercedes-Benz	18.0%	5 Cadillac	21.9%	5 Mazda	-15.7%	5 Kia	-4.0%

### **Top Selling Light Vehicles**

	Dec.		12 mos.
1 Ford F series	74,592	1 Ford F series	763,40
2 Chevrolet Silverado	42,593	2 Chevrolet Silverado	480,41
3 Ram	33,405	3 Toyota Camry	408,48
4 Honda Accord	32,321	4 Honda Accord	366,67
5 Toyota Camry	29,964	5 Ram	355,67
6 Honda Civic	29,006	6 Honda Civic	336,18
7 Honda CR-V	28,759	7 Nissan Altima	320,72

-C-

8	Nissan Altima		Honda CR-V	
9	Ford Escape	24,462	Toyota Corolla/ Matrix	302,18
10	Ford Fusion	24,408	Ford Escape	295,99

Top Selling Cars

	Dec.	12 mos.
1 Honda Accord	32,321	1 Toyota Camry 408,48
2 Toyota Camry	29,964	2 Honda Accord 366,67
3 Honda Civic	29,000	3 Honda Civic 336,18
4 Nissan Altima	24,810	4 Nissan Altima 320,72
5 Ford Fusion	24,405	5 Toyota Corolla/ Matrix 302,18
6 Toyota Corolla/ Matrix	22,562	6 Ford Fusion 295,28
7 Hyundai Elantra	21,697	7 Chevrolet Cruze 248,22
8 Chevrolet Cruze	18,162	8 Hyundai Elantra 247,91
9 BMW 3/4 series	16,739	9 Ford Focus 234,57
10 Toyota Prius	15,720	10 Toyota Prius 234,22

Top Selling Light Trucks

	Dec.	12 mos.
1 Ford F series	74,592	1 Ford F series 763,40
2 Chevrolet Silverado	42,593	2 Chevrolet Silverado 4180,41
3 Ram	33,405	3 Ram 355,67
4 Honda CR-V	28,759	4 Honda CR-V 303,90
5 Ford Escape	24,462	5 Ford Escape 295,99
6 Toyota RAV4	20,970	6 Chevrolet Equinox 238,19
7 GMC Sierra	17,854	7 Toyota RAV4 218,24
8 Chevrolet Equinox	17,212	8 Ford Explorer 192,39
9 Ford Explorer	16,907	9 GMC Sierra 184,38
10 Jeep Grand Cherokee	16,517	10 Jeep Grand Cherokee 174,27

Table sorted by year-to-date sales

	Dec. 2013	Dec. 2012	% change	12 mos. 2013	12 mos. 2012	% change
Buick	15,379	16,473	-7%	205,509	180,408	14%
Cadillac	18,165	18,248	-1%	182,543	149,782	22%
Chevrolet	153,493	167,091	-8%	1,947,125	1,851,646	5%
GMC	43,120	43,921	-2%	450,901	413,881	9%
<b>General Motors</b>	<b>230,157</b>	<b>245,733</b>	<b>-6%</b>	<b>2,786,078</b>	<b>2,595,717</b>	<b>7%</b>
Ford division	208,608	205,518	2%	2,403,542	2,160,859	11%
Lincoln	7,984	7,384	8%	81,694	82,150	-1%
<b>Ford Motor Co.</b>	<b>216,592</b>	<b>212,902</b>	<b>2%</b>	<b>2,485,236</b>	<b>2,243,009</b>	<b>11%</b>
Lexus	34,757	30,607	14%	273,847	244,166	12%
Scion	4,323	5,522	-22%	68,321	73,505	-7%
Toyota Division	151,763	158,014	-4%	1,893,874	1,764,833	7%
<i>Toyota/Scion</i>	<i>156,086</i>	<i>163,536</i>	<i>-5%</i>	<i>1,962,195</i>	<i>1,838,338</i>	<i>7%</i>
<b>Toyota Motor Sales</b>	<b>190,843</b>	<b>194,143</b>	<b>-2%</b>	<b>2,236,042</b>	<b>2,082,504</b>	<b>7%</b>
Chrysler Division	20,270	25,513	-21%	302,492	307,967	-2%
Dodge	47,689	52,391	-9%	596,343	524,989	14%
Ram	36,028	30,885	17%	367,843	300,928	22%
<i>Dodge/Ram</i>	<i>83,717</i>	<i>83,276</i>	<i>1%</i>	<i>964,186</i>	<i>825,917</i>	<i>17%</i>
Fiat	3,745	3,707	1%	43,236	43,772	-1%
Jeep	53,275	39,871	34%	490,454	474,131	3%
<b>Chrysler Group</b>	<b>161,007</b>	<b>152,367</b>	<b>6%</b>	<b>1,800,368</b>	<b>1,651,787</b>	<b>9%</b>
Acura	15,751	16,034	-2%	165,436	156,216	6%
Honda Division	119,504	116,740	2%	1,359,876	1,266,569	7%
<b>American Honda Motor Co.</b>	<b>135,255</b>	<b>132,774</b>	<b>2%</b>	<b>1,525,312</b>	<b>1,422,785</b>	<b>7%</b>
Hyundai division	63,005	59,435	6%	720,783	703,007	3%
Kia	33,631	39,178	-14%	535,179	557,599	-4%
<b>Hyundai-Kia</b>	<b>96,636</b>	<b>98,613</b>	<b>-2%</b>	<b>1,255,962</b>	<b>1,260,606</b>	<b>0%</b>
Infiniti	13,232	12,627	5%	116,455	119,877	-3%
Nissan Division	96,526	86,663	11%	1,131,965	1,021,779	11%
<b>Nissan North America</b>	<b>109,758</b>	<b>99,290</b>	<b>11%</b>	<b>1,248,420</b>	<b>1,141,656</b>	<b>9%</b>
Audi	17,013	14,841	15%	158,061	139,310	14%
Bentley*	350	237	48%	2,872	2,315	24%
Lamborghini*	46	44	5%	552	520	6%
Porsche	3,246	2,952	10%	42,323	35,043	21%
VW division	34,015	44,005	-23%	407,704	438,133	-7%
<b>VW Group Of America</b>	<b>54,670</b>	<b>62,079</b>	<b>-12%</b>	<b>611,512</b>	<b>615,321</b>	<b>-1%</b>
Subaru	<b>40,172</b>	<b>36,653</b>	<b>10%</b>	<b>424,683</b>	<b>336,441</b>	<b>26%</b>
BMW division	37,389	37,399	0%	309,280	281,460	10%
Mini	6,592	6,456	2%	66,502	66,123	1%
Rolls-Royce*	84	80	5%	1,008	949	6%
<b>BMW Group</b>	<b>44,065</b>	<b>43,935</b>	<b>0%</b>	<b>376,790</b>	<b>348,532</b>	<b>8%</b>
Maybach	-	5	-100%	6	50	-88%
Mercedes-Benz	35,835	30,378	18%	334,344	295,013	13%
Smart USA	855	996	-14%	9,264	10,009	-7%
<b>Daimler AG</b>	<b>36,690</b>	<b>31,379</b>	<b>17%</b>	<b>343,614</b>	<b>305,072</b>	<b>13%</b>
Mazda	<b>22,964</b>	<b>27,253</b>	<b>-16%</b>	<b>283,947</b>	<b>277,044</b>	<b>3%</b>
Jaguar	1,544	1,049	47%	16,952	12,011	41%
Land Rover	5,764	5,174	11%	50,010	43,664	15%
<b>Jaguar Land Rover N.A.</b>	<b>7,308</b>	<b>6,223</b>	<b>17%</b>	<b>66,962</b>	<b>55,675</b>	<b>20%</b>
Mitsubishi	<b>6,423</b>	<b>4,113</b>	<b>56%</b>	<b>62,227</b>	<b>57,790</b>	<b>8%</b>
<b>Volvo Cars N.A.</b>	<b>4,888</b>	<b>6,150</b>	<b>-21%</b>	<b>61,233</b>	<b>68,117</b>	<b>-10%</b>

**Suzuki**

<b>Maserati</b>	<b>1,053</b>	<b>333</b>	<b>216%</b>	<b>4,768</b>	<b>2,730</b>	<b>75%</b>
<b>Other**</b>	<b>253</b>	<b>247</b>	<b>2%</b>	<b>3,036</b>	<b>2,949</b>	<b>3%</b>
<b>U.S. LIGHT VEHICLE</b>	<b>1,358,734</b>	<b>1,356,132</b>	<b>0%</b>	<b>15,582,136</b>	<b>14,493,092</b>	<b>8%</b>

\*Estimate

**Highlights**

<b>Mfgr. highest volume - Dec.</b>	<b>GM</b>	<b>230,157</b>	<b>Mfgr. highest volume - 12 mos.</b>	<b>GM</b>	<b>2,786,078</b>
<b>Mfgr. gained the most volume - Dec.</b>	<b>Nissan</b>	<b>10,468</b>	<b>Mfgr. gained the most volume - 12 mos.</b>	<b>Ford Motor Co.</b>	<b>242,227</b>
<b>Mfgr. lost the most volume - Dec.</b>	<b>GM</b>	<b>(15,576)</b>	<b>Mfgr. lost the most volume - 12 mos.</b>	<b>Volvo</b>	<b>(6,884)</b>
<b>Mfgr. highest % increase - Dec.</b>	<b>Maserati</b>	<b>216%</b>	<b>Mfgr. highest % increase - 12 mos.</b>	<b>Maserati</b>	<b>75%</b>
<b>Mfgr. biggest % drop - Dec.</b>	<b>Volvo</b>	<b>-21%</b>	<b>Mfgr. biggest % drop - 12 mos.</b>	<b>Volvo</b>	<b>-10%</b>

<b>Brand highest volume - Dec.</b>	<b>Ford</b>	<b>208,608</b>	<b>Brand highest volume - 12 mos.</b>	<b>Ford</b>	<b>2,403,542</b>
<b>Brand gained the most volume - Dec.</b>	<b>Jeep</b>	<b>13,404</b>	<b>Brand gained the most volume - 12 mos.</b>	<b>Ford</b>	<b>242,683</b>
<b>Brand lost the most volume - Dec.</b>	<b>Chevrolet</b>	<b>(13,598)</b>	<b>Brand lost the most volume - 12 mos.</b>	<b>VW</b>	<b>(30,429)</b>
<b>Brand highest % increase - Dec.</b>	<b>Maserati</b>	<b>216%</b>	<b>Brand highest % increase - 12 mos.</b>	<b>Maserati</b>	<b>75%</b>
<b>Brand biggest % drop - Dec.</b>	<b>VW</b>	<b>-23%</b>	<b>Brand biggest % drop - 12 mos.</b>	<b>Volvo</b>	<b>-10%</b>

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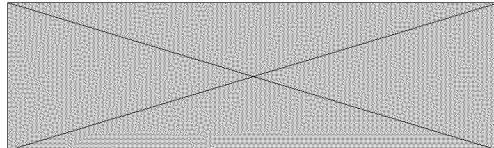
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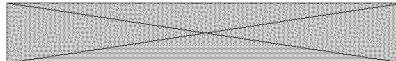
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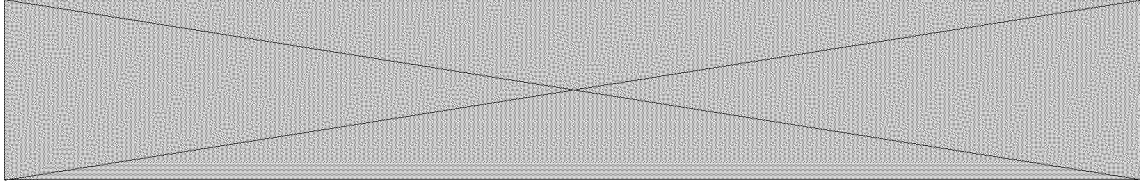
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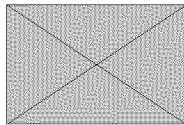
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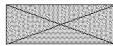
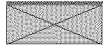
**New Mazda Skyactiv Engines,**  
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Jan 06, 2014 04:50 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



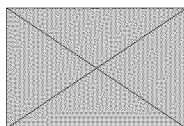
Today on Green Car Reports: Mazda is planning its next-generation Skyactiv engines, the Nissan e-NV200 electric London taxi debuts, and we preview the green production cars and concepts set to debut at the 2014 Detroit Auto Show. All this and more on Green Car Reports. We've updated our 2013 plug-in electric-car sales report with the latest...

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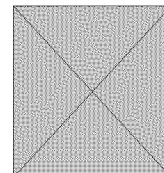
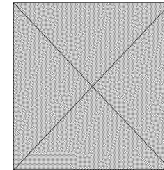
**Green Car Preview: 2014**  
**Detroit Auto Show Concepts**  
**& Production Models**

Jan 06, 2014 04:44 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
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The important global auto shows tend to go in waves, and this year's Detroit Auto Show isn't looking particularly notable for its green cars. Barring surprises,

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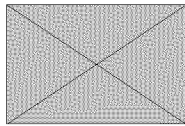
there will be no global debuts of new plug-in electric cars, hybrids, or even new diesel vehicles. Instead, the most popular introductions are likely to be the 2015 Ford F-150 pickup...

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## Mitsubishi Outlander Plug-In Hybrid SUV Now Delayed Til 2015 In U.S.

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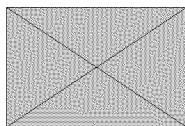
The Mitsubishi Outlander Plug-In Hybrid has generated a fair bit of attention, as the only plug-in hybrid sport utility vehicle thus far that will be offered for sale in the U.S. But potential buyers will have to wait a little longer, it turns out, due to high demand in other parts of the world and a limited supply of lithium-ion battery packs...

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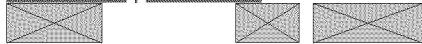
## Volkswagen, Audi & Porsche Grow Diesel Sales Beyond 100,000 In 2013

Jan 06, 2014 01:50 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



For drivers whose travel include long stretches of high-speed highways, diesel cars offer a fuel-efficient alternative to gasoline vehicles. For many years, the biggest seller of diesel vehicles in the U.S. has been Volkswagen--more recently joined by its corporate siblings Audi and Porsche. MORE: Volkswagen Jetta TDI: Much More Mileage Than EPA...

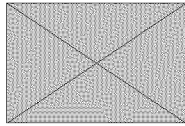
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## Nissan e-NV200 Electric London Taxi Revealed, Arrives 2015

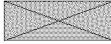
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(Antony Ingram)



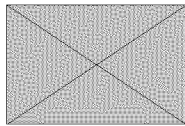
You might be unfamiliar with the name LTI TXII, but if you've ever visited London you've probably traveled in one at some point. It's best known as London's black cab or 'Hackney Carriage', and it's known the world over for its iconic shape. Nissan has incorporated the black cab's famous face onto its new London taxi—with limited success. But the...

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## Mazda Plans Next-Gen SkyActiv Engines For Even Better Gas Mileage

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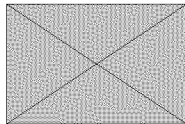
Mazda's Skyactiv fuel-efficient gasoline engines are already getting good real-world results, but the company isn't resting on its laurels. Instead, the Japanese automaker is already working on the next two generations of its Skyactiv engine line, ready to power its future vehicles. Set to debut in 2020, Automotive News reports the next-gen...

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## Future Electric Utility Trucks: Lighting Your Home While Crews Restore Power

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(Antony Ingram)



As weather-related power outages left hundreds of thousands without electricity during the holiday season, attention has once again turned to the role of electric vehicles in providing backup power when the lights go out. While running down your vehicle to keep your house warm could never be described as an ideal scenario, it's certainly a...

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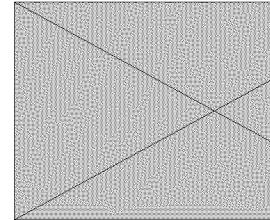
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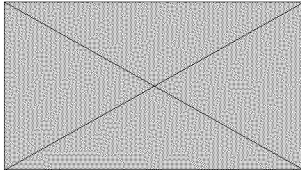
January 7, 2014



## Diesel Shines Among Ward's 10 Best Engines

**Digital Magazine**

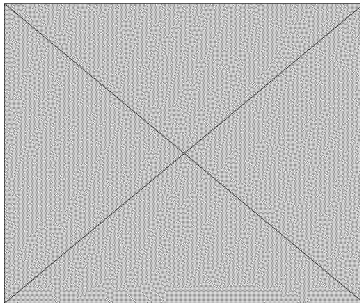
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Takeaways from this year's competition: Direct injection and forced induction remain extremely popular; diesels still hold a considerable fuel-efficiency edge over gasoline engines; and there is a future for pushrods.

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## 2014 Winner: Audi 3.0L TFSI Supercharged DOHC V-6

The 333-hp TFSI V-6 is as stealthy and lethal as an assassin's bullet. It revs

so effortlessly and sounds so enticing in the Audi S5, it's hard to think of this engine excluded from the list.

[FULL ARTICLE](#)

## **2014 Winner: BMW 3.0L N57 Turbodiesel DOHC I-6**

On a long road trip, we're convinced 40 mpg (5.8 L/100 km) is within reach in this spacious luxury cruiser with its 8-speed automatic transmission, because diesels, unlike gasoline engines, routinely outperform their stated mileage estimates.

[FULL ARTICLE](#)

## **2014 Winner: Chrysler 3.0L EcoDiesel DOHC V-6**

Chrysler's 3.0L turbodiesel serves up the red meat truck lovers can't resist. It has a nice grumble, without being overly loud or annoying. Finally, pickup buyers can have the fuel-efficient torque they deserve.

[FULL ARTICLE](#)

## **2014 Winner: Chrysler Group 83-kW Electric Motor**

The 500e dashes from stoplights with such confidence that even hard-hearted internal-combustion devotees will find themselves recalibrating their perceptions after a test drive.

[FULL ARTICLE](#)

## **2014 Winner: Ford 1.0L EcoBoost DOHC DI I-3**

The 1.0L EcoBoost is a perfect way to reintroduce a new generation of 3-cyl. car engines to a skeptical American audience. Other automakers gearing up 3 cyls. for the U.S. should send Ford a thank you note.

[FULL ARTICLE](#)

## **2014 Winner: General Motors 6.2L LT1 OHV DI V-8**

This engine program establishes definitively that old-school cam-in-block configurations relying on pushrods can deliver stunning performance and cost advantages in a powertrain world dominated by newer overhead-cam architectures.

Digital Magazine

[FULL ARTICLE](#)

## **2014 Winner: General Motors 2.0L Turbodiesel DOHC I-4**

There is a myth that Americans never will accept diesels, yet Volkswagen has found fans in the U.S. for decades. GM is aiming to attract this audience with the Cruze turbodiesel. We think it will succeed.

[FULL ARTICLE](#)

## **2014 Winner: Honda 3.5L SOHC V-6**

There's no denying the punch, power, silkiness and "I've got this" attitude of a world-class V-6. For some of them, the tradeoff has been middling fuel economy. Not so for the Honda Accord's superb 3.5L.

[FULL ARTICLE](#)

## **2014 Winner: Porsche 2.7L DOHC DI H-6**

Porsche deserves credit for delivering a compact naturally aspirated engine that feels and sounds so powerful. This is the type of efficient yet diabolically fun powerplant every sports car maker needs to do well as CAFE standards ramp up in the U.S.

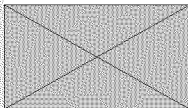
[FULL ARTICLE](#)

## **2014 Winner: VW 1.8L TSI Turbocharged DOHC I-4**

VW's latest 4-cyl. offering sets a new refinement benchmark for small-displacement engines with forced induction. The well-equipped Jetta that delivered this engine to our offices like a holiday gift basket can be had for less than \$24,000.

[FULL ARTICLE](#)

## **Special Report: 2014 Ward's 10 Best Engines**



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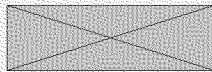
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#### ABOUT THIS NEWSLETTER



**To:** ComplianceInfo[ComplianceInfo@epa.gov]  
**Cc:** [REDACTED] Ex. 6  
**From:** FuelEconomy  
**Sent:** Tue 1/7/2014 4:21:38 PM  
**Subject:** FW: [FuelEconomy] Fuel consumption for my 2013 Jetta Hybrid  
ATT00001.txt

**From:** [REDACTED] Ex. 6  
**Sent:** Tuesday, January 07, 2014 11:06 AM  
**To:** FuelEconomy  
**Subject:** [FuelEconomy] Fuel consumption for my 2013 Jetta Hybrid

My 2013 Jetta Hybrid gets about 37mpg on mostly highway driving. I have about 4000 mile on it now. This is substantially below the EPA estimates for the car which estimates I relied on to judge the value of the car. I also note that in EPA's website that responding Jetta Hybrid owners are also reporting mpg's substantially below EPA's. My question is: who screwed up the EPA estimates - EPA or VW?

Robert Lappi

[REDACTED] Ex. 6

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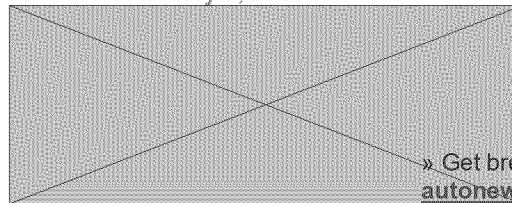
Fueleconomy mailing list  
Fueleconomy@email.ornl.gov  
<https://email.ornl.gov/mailman/listinfo/fueleconomy>  
To unsubscribe, send a blank email to fueleconomy-unsubscribe@email.ornl.gov

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 1/7/2014 9:36:46 PM  
**Subject:** DAILY: First Ram 1500 EcoDiesels expected at dealerships in Feb. | Supplier Nippon Seiki to pay \$4.56M in price-fixing settlement | Nissan plucks one of Hyundai's sales stars

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**First Shift: December winners, losers**

January 7, 2014



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## TOP NEWS

### **First Ram 1500 EcoDiesels expected at dealerships in February**

3:58 pm U.S. ET | Jan 7

Chrysler Group is scheduled to start building its first salable 2014 Ram 1500 EcoDiesel pickups this month, several months later than originally expected. ...

» [READ](#)

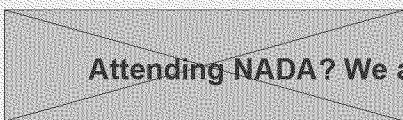
### **Nippon Seiki to pay \$4.56 million in supplier price-fixing settlement**

UPDATED: 1/7/13 1:47 ET -- Adds comment, details

12:04 pm U.S. ET | Jan 7

Japanese supplier Nippon Seiki and its affiliates have agreed to pay a \$4.56 million civil settlement for price fixing its instrument panel clusters. ... » [READ](#)

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## **Nissan plucks one of Hyundai's sales stars**

UPDATED: 1/7/14 3:18 pm ET - adds link  
1:48 pm U.S. ET | Jan 7

Nissan has recruited a rising star from Hyundai, Derrick Hatami, to take over its United States sales operations as Nissan reorganizes its North American management structure. ... » [READ](#)

## **GM picks Paul Edwards to lead Chevy's U.S. marketing**

1:02 pm U.S. ET | Jan 7

General Motors today named Paul Edwards, a GM marketing director, as vice president of U.S. marketing for Chevrolet. Edwards, 44, replaces Chris Perry, who resigned last month. He will report to Chevy's global marketing chief, Tim Mahoney. His appointment is effective immediately. ... » [READ](#)

## **GM has record China sales in 2013**

6:33 am U.S. ET | Jan 7

General Motors Co. and its Chinese joint ventures sold a record 3.16 million vehicles in China in 2013, an 11 percent increase from a year earlier, the U.S. automaker said today. ... » [READ](#)

## **GM's Opel/Vauxhall European market share rises on Adam minicar**

12:01 am U.S. ET | Jan 7

General Motors brands Opel and Vauxhall increased their market share in Europe in 2013, as sales of the new Adam minicar helped counter a declining auto market. ... » [READ](#)

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- » BYD says Chinese cars headed to U.S. in late 2015
- » Mazda pins improved mpg on Skyactiv 2

## **VIRAL VIDEO**

Viral video rankings for week of 1/7/2014

### **Luxury ads take backseat to Toyota Tundra**

This week's newest auto brand viral videos were a contrast between blue collar and white, work and pleasure.  [videos](#) Published: Jan 7 12:01 am U.S. Eastern time

### **Honda launches review of digital advertising, marketing work**

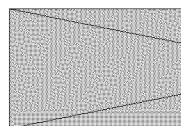
1:55 pm U.S. ET | Jan 7

### **Manheim waives online fees for snowed-in buyers**

6:33 pm U.S. ET | Jan 6

### **Audi's Stadler says production vehicle will get laser headlights**

7:23 am U.S. ET | Jan 7



## **ARCHIVED WEBINARS**

» 12/3 - Global Supply Chain  
by HP

» 11/19 - Pre-Owned Strategies by FirstLook

» 11/14 - What Influences Consumers?  
by Microsoft

» 11/12 - Building the Best by Automotive News

» Jan. 14-15, 2014 - World Congress  
» April 7, 2014 - PACE Awards  
» May 14 -

**Toyota gears up for more fuel-cell vehicles, will add stations**

6:14 pm U.S. ET | Jan 6

**Brazil auto sales down in 2013, first time in a decade**

9:35 am U.S. ET | Jan 7



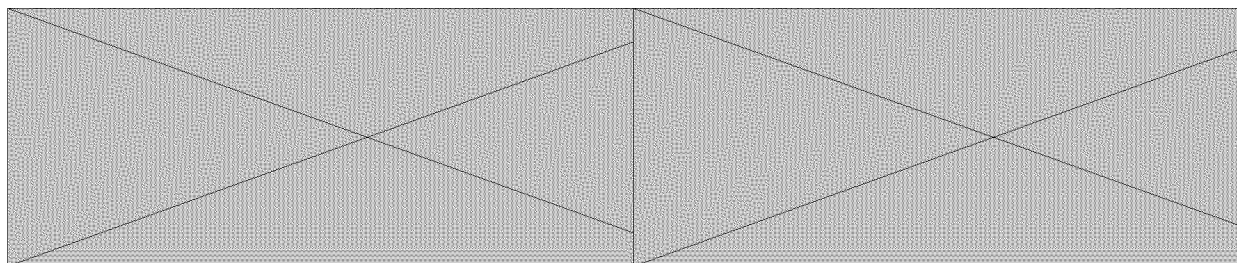
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**» June 4, 2014**

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**To:** Good, David[good.david@epa.gov]  
**From:** Ex. 7  
**Sent:** Wed 1/8/2014 11:12:19 AM  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)  
Final CAFE 2012 PC to EPA corrected Jan 2014.pdf

Hi Dave;

Please find attached the corrected 2012 VWGoA Final Passenger Car CAFE cover letter. If you have any questions please contact me. I will enter this same file into Verify today.

Ex. 7

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Thursday, January 02, 2014 3:38 PM  
**To:** Ex. 7  
**Cc:** French, Roberts; Ex. 7  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Ex. 7

Happy New Year, etc.

When you get a chance, please email me a copy of the revision/addendum to the attached VW CAFE letter (and enter it into the Verify document module).

Thanks

**From:** Ex. 7  
**Sent:** Thursday, December 26, 2013 9:05 AM

**To:** Good, David  
**Cc:** French, Roberts; [REDACTED] **Ex. 7**  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Hi Dave;

I checked the files and found that our letter you attached contained a typo, the correct Import Passenger Car CAFE reformed standard should be 33.7 MPG as you see from the Verify processing report, and not the 30.7 MPG. I will revise the letter, if you prefer, when I am back in the office on January 7<sup>th</sup>.

Happy New Year!

**Ex. 7**

**From:** Good, David [<mailto:good.david@epa.gov>]  
**Sent:** Monday, December 23, 2013 2:34 PM  
**To:** [REDACTED] **Ex. 7**  
**Cc:** French, Roberts; [REDACTED] **Ex. 7**; Snyder, Jim  
**Subject:** 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

**Ex. 7**

While reviewing VW's 2012 Passenger Car CAFE letter & the data in Verify, I noticed a discrepancy in the VW letter (attached) and the Verify Report (attached) for the Import passenger car CAFE standard. Page 1 of VW letter indicates an Import Pass Car standard of 30.7 mpg while the Verify report indicates a manufacturer input CAFE standard of 33.674.

Your CAFE letter didn't supply the footprint standards calculations, so I can't double check the standard listed on page 1 of the letter.

Based on the footprint data which you entered into Verify, Verify calculated a CAFE standard of 33.7 mpg.

Please advise.

Thanks

# VOLKSWAGEN

GROUP OF AMERICA

Mr. Linc Wehrly  
Compliance and Innovative Strategies Division  
Light-Duty Vehicle Group  
U.S. Environmental Protection Agency  
2000 Traverwood Drive  
Ann Arbor, Michigan 48105

Mr. Oliver Schmidt Name  
General Manager Title  
EEO Department  
248 754 4201 Phone  
248 754 4207 Fax  
Oliver.Schmidt@vw.com E-Mail

January 7, 2014 Date

VOLKSWAGEN GROUP OF AMERICA, INC.  
3800 HAMLIN ROAD  
AUBURN HILLS, MI 48326  
PHONE +1 248 754 5000

Subject: VOLKSWAGEN Group 2012 Final Passenger Car CAFE Reports - Revision

Dear Mr. Wehrly;

With our letter of May 30, 2013 we submitted the Passenger Car 2012 report which contained a typographical error to the Import Passenger Car category reformed CAFE standard. The corrected version follows.

Enclosed is the manufacturer's calculation for the 2012 final fuel economy average. This calculation is provided for the VOLKSWAGEN Import and Domestic Passenger Car categories and in accordance to the regulations contained in 40 CFR 600.510-12. The final CAFE values are based upon approved EPA fuel economy data and final production volumes for the 2012 model year vehicles.

The Import Passenger Car category report has successfully been processed using the Verify system. The Baseline (Non-AMFA) CAFE adjusted value is 33.2 MPG. The adjusted CAFE with AMFA Credits included is **33.3** MPG. This value does not exceed the maximum cap and increase for 2012 of 1.2 MPG as specified in paragraph (h) of 40 CFR 600.510-12.

The calculated reformed CAFE Import category standard is **33.7** MPG, as specified in paragraph (c) of 49 CFR 531.5.

The Domestic Passenger Car category report has successfully been processed using the Verify system. The final CAFE value is **33.7** MPG.

The calculated reformed CAFE Domestic category standard is **32.1** MPG, as specified in paragraph (c) of 49 CFR 531.5.

The attachments to this letter contain the domestic content calculation as requested in the EPA certification mail-out CD-92-06. The Volkswagen Group of America, Inc. procedure for this calculation follows the procedure outlined in 40 CFR 600.511-08. Our procedure is described as follows:

- For vehicles produced outside of the NAFTA territory, the "declared value" of foreign components is basically, the ex factory value of each of the models which we have imported. The freight and insurance is added to this value and is labeled as "adjusted import value". The value of U.S. components has not been excluded because this value is included in the declared value upon importation of the vehicles. The "cost of production" as defined in the regulations equates to our wholesale price to the dealer.
- For vehicles produced within the NAFTA territory (Mexico), we followed the procedure established according to NAFTA Appendix 300-A.3, where Paragraph 1 states:

"For purposes of the Energy Policy and Conservation Act of 1975, 42 U.S.C. 6201...the United States shall consider an automobile to be domestically manufactured in any model year if at least 75 percent of the cost to the manufacturer of such automobile is attributable to value added in Canada, Mexico or the United States...Paragraph 1 shall apply beginning with the next model year after January 1, 2004, where the enterprise subject to the fuel economy requirements for those automobiles under the CAFE Act, has not made an election under subparagraph a)."

For purposes of paragraph 1, and according to 40 CFR 600.511-08, the ratio obtained in the domestic production determination was obtained from dividing the sum of the declared value (as defined in §600.502) of all of the imported components installed or included on automobiles produced within such a car line within a given model year plus the cost of transportation and insuring such components to the United States Port of entry, by the cost of production (as defined in §600.502) of all automobiles within such a car line.

The calculated results for each model are listed in the right column entitled CAFE Ratio. These values are clearly greater than the 0.25 ratio and therefore all Volkswagen Group carlines, with the exception of the Passat, are determined to be Import within the Import category Passenger Car report.

The Volkswagen Passat models are assembled in the Chattanooga, Tennessee USA manufacturing facility and are in the Domestic category Passenger Car report.

If you have any questions or require additional information, please contact me or Mr. Richard Thomas at (248) 754-4213.

Sincerely,  
VOLKSWAGEN Group of America, Inc.



Mr. Oliver Schmidt  
General Manager  
Engineering and Environmental Office

Attachments

# VWGoA Import Category Passenger Car Baseline

INDEX #	Brand	Carline	Engine	DISP	Trans	CITY	HWY	COMB Round	Model Type Sales	Weighted Sales/MPG
52	Audi	A3	2.0L TDI	2.0 / 120	S6	39.0595	59.3797	46.2	(b) (4)	(b) (4)
67	Audi	A3	2.0L TFSI	2.0 / 121	M6	25.3000	40.3000	30.4		
68	Audi	A3	2.0L TFSI	2.0 / 121	S6	26.6000	38.2000	30.8		
69	Audi	A3 quattro	2.0L TFSI	2.0 / 121	S6	27.2000	37.1000	30.9		
20	Audi	A4	2.0L TFSI	2.0 / 121	AV	29.2669	42.8335	34.1		
31	Audi	A4 Avant quattro	2.0L TFSI	2.0 / 121	S8	26.0806	39.7929	30.9		
33	Audi	A4 quattro	2.0L TFSI	2.0 / 121	M6	27.6280	42.4302	32.8		
29	Audi	A4 quattro	2.0L TFSI	2.0 / 121	S8	26.0806	39.7929	30.9		
21	Audi	A5 Cabriolet	2.0L TFSI	2.0 / 121	AV	29.2669	42.8335	34.1		
32	Audi	A5 Cabriolet quattro	2.0L TFSI	2.0 / 121	S8	26.0806	39.7929	30.9		
34	Audi	A5 quattro	2.0L TFSI	2.0 / 121	M6	27.6280	42.4302	32.8		
30	Audi	A5 quattro	2.0L TFSI	2.0 / 121	S8	26.0806	39.7929	30.9		
9	Audi	A6	2.0L TFSI	2.0 / 121	AV	31.4000	46.9000	36.9		
11	Audi	A6 quattro	3.0L TFSI	3.0 / 183	S8	23.1000	37.5000	27.9		
10	Audi	A7 quattro	3.0L TFSI	3.0 / 183	S8	22.9000	37.4000	27.7		
61	Audi	A8	4.2L V8 FSI	4.2 / 254	S8	21.7000	35.2000	26.2		
60	Audi	A8L	4.2L V8 FSI	4.2 / 254	S8	21.7000	35.2000	26.2		
16	Audi	A8L	6.3L W12	6.3 / 384	S8	16.7000	28.3000	20.5		
75	Audi	R8	4.2L V8 FSI	4.2 / 254	M6	13.6735	24.6004	17.1		
73	Audi	R8	4.2L V8 FSI	4.2 / 254	S6	16.0427	27.4569	19.7		
43	Audi	R8	5.2L V10	5.2 / 303	M6	13.7000	23.5099	16.9		
41	Audi	R8	5.2L V10	5.2 / 303	S6	15.5398	24.5419	18.6		
74	Audi	R8 Spyder	4.2L V8 FSI	4.2 / 254	M6	13.6735	24.6004	17.1		
66	Audi	R8 Spyder	4.2L V8 FSI	4.2 / 254	S6	16.0427	27.4569	19.7		
42	Audi	R8 Spyder	5.2L V10	5.2 / 303	M6	13.7000	23.5099	16.9		
40	Audi	R8 Spyder	5.2L V10	5.2 / 303	S6	15.5398	24.5419	18.6		
39	Audi	S4	3.0L TFSI	3.0 / 183	M6	21.5000	34.1000	25.8		
37	Audi	S4	3.0L TFSI	3.0 / 183	S7	21.6000	35.0000	26.1		
56	Audi	S5	4.2L V8 FSI	4.2 / 254	M6	17.3000	29.3000	21.2		
57	Audi	S5	4.2L V8 FSI	4.2 / 254	S6	20.4000	31.0000	24.1		
38	Audi	S5 Cabriolet	3.0L TFSI	3.0 / 183	S7	20.3000	34.0000	24.8		
70	Audi	TT Coupe quattro	2.0L TFSI	2.0 / 121	S6	28.1740	41.7865	33.0		
71	Audi	TT Roadster quattro	2.0L TFSI	2.0 / 121	S6	28.1740	41.7865	33.0		
80	Audi	TTRS Coupe	2.5L T	2.5 / 151	M6	21.2000	34.2000	25.6		
8	Bentley	Mulsanne	6.8L V8	6.8 / 412	S8	12.7000	23.4000	16.0		
12	Bentley - 85	Continental Flying Spur	6.0L W12	6.0 / 366	S6	13.7000	24.6000	17.1		
14	Bentley - 85	Continental GT	6.0L W12	6.0 / 366	S6	13.9000	24.7000	17.3		
88	Bentley - 85	Continental GTC	6.0L W12	6.0 / 366	S6	13.7000	24.6000	17.1		
13	Bentley - 85	Continental Supersports Convertible	6.0L W12	6.0 / 366	S6	13.9000	24.7000	17.3		
85	Bugatti	Veyron	V16	V16 / 488	L7	10.0000	17.9000	12.5		
7	Lamborghini	Aventador Coupe	6.5L V12	6.5 / 396	S7	12.5000	22.7000	15.7		
64	Lamborghini	Gallardo Coupe	5.2L Lamborghini	5.2 / 303	M6	14.0000	24.0000	17.2		
62	Lamborghini	Gallardo Coupe	5.2L Lamborghini	5.2 / 303	S6	16.1000	25.4000	19.3		
165	Lamborghini	Gallardo Spyder	5.2L Lamborghini	5.2 / 303	M6	13.0000	22.6000	16.1		
63	Lamborghini	Gallardo Spyder	5.2L Lamborghini	5.2 / 303	S6	16.0000	25.4000	19.2		
86	Volkswagen	Beetle	2.0L TFSI	2.0 / 121	M6	25.4597	41.4194	30.8		
45	Volkswagen	Beetle	2.0L TFSI	2.0 / 121	S6	26.5000	41.7262	31.7		
87	Volkswagen	Beetle	R5 2.5L SRE	R5 / 151	M5	26.3336	42.6003	31.8		
25	Volkswagen	Beetle	R5 2.5L SRE	R5 / 151	S6	27.1720	38.8543	31.4		
91	Volkswagen	Beetle Convertible	2.0L	2.0 / 121	S6	26.8000	40.6000	31.6		
90	Volkswagen	Beetle Convertible	R5 2.5L SRE	R5 / 151	S6	26.3255	37.8827	30.5		
4	Volkswagen	CC	2.0L TFSI	2.0 / 121	M6	25.7135	41.7856	31.1		
3	Volkswagen	CC	2.0L TFSI	2.0 / 121	S6	27.0121	42.7212	32.4		
58	Volkswagen	CC 4MOTION	3.6L VR6 FSI	3.6 / 219	S6	20.5000	33.5000	24.8		
5	Volkswagen	Eos	2.0L TFSI	2.0 / 121	S6	27.5000	41.5000	32.4		
55	Volkswagen	Golf	2.0L TDI	2.0 / 120	M6	38.7780	60.3377	46.2		
51	Volkswagen	Golf	2.0L TDI	2.0 / 120	S6	39.0595	59.3797	46.2		
28	Volkswagen	Golf	R5 2.5L SRE	R5 / 151	M5	26.2168	44.2259	32.1		
24	Volkswagen	Golf	R5 2.5L SRE	R5 / 151	S6	27.6217	42.4798	32.8		
89	Volkswagen	Golf R	2.0L TFSI	2.0 / 121	M6	23.9000	37.1000	28.5		
46	Volkswagen	GTI	2.0L TFSI	2.0 / 121	M6	25.9213	41.0913	31.1		
44	Volkswagen	GTI	2.0L TFSI	2.0 / 121	S6	29.8054	43.2753	34.7		
79	Volkswagen	Jetta	2.0 MPI	2.0 / 121	M5	28.8000	46.2000	34.7		
78	Volkswagen	Jetta	2.0 MPI	2.0 / 121	S6	28.1000	41.4990	32.9		
54	Volkswagen	Jetta	2.0L TDI	2.0 / 120	M6	38.7780	60.3377	46.2		
50	Volkswagen	Jetta	2.0L TDI	2.0 / 120	S6	39.0595	59.3797	46.2		
27	Volkswagen	Jetta	R5 2.5L SRE	R5 / 151	M5	26.2168	44.2259	32.1		
23	Volkswagen	Jetta	R5 2.5L SRE	R5 / 151	S6	27.6217	42.4798	32.8		
18	Volkswagen	Jetta [GLI]	2.0L TFSI	2.0 / 121	M6	26.5443	45.0964	32.6		
17	Volkswagen	Jetta [GLI]	2.0L TFSI	2.0 / 121	S6	29.4666	44.8970	34.9		
53	Volkswagen	Jetta SportWagen	2.0L TDI	2.0 / 120	M6	38.7780	60.3377	46.2		
49	Volkswagen	Jetta SportWagen	2.0L TDI	2.0 / 120	S6	37.6000	56.2000	44.2		
26	Volkswagen	Jetta SportWagen	R5 2.5L SRE	R5 / 151	M5	26.2168	44.2259	32.1		
22	Volkswagen	Jetta SportWagen	R5 2.5L SRE	R5 / 151	S6	27.6217	42.4798	32.8		
84	Volkswagen	Tiguan	2.0L TFSI	2.0 / 121	M6	21.7000	35.8000	26.4		
83	Volkswagen	Tiguan	2.0L TFSI	2.0 / 121	S6	27.2963	37.1906	31.0		
VOLKSWAGEN GROUP Total Projected Units										
Baseline unadj unrounded w/o FFV (MPG)										
Baseline unadj rounded w/o FFV (MPG)										

## VWGoA Import Category Passenger Car AMFA

INDEX #	Brand	Carline	Engine	DISP	Trans	CITY	Hwy	COMB Round	Model Type Sales	Weighted Sales/MPG
52	Audi	A3	2.0L TDI	2.0 / 120	S6	39.0595	59.3797	46.2	(b) (4)	
67	Audi	A3	2.0L TFSI	2.0 / 121	M6	25.3000	40.3000	30.4		
68	Audi	A3	2.0L TFSI	2.0 / 121	S6	26.6000	38.2000	30.8		
69	Audi	A3 quattro	2.0L TFSI	2.0 / 121	S6	27.2000	37.1000	30.9		
20	Audi	A4	2.0L TFSI	2.0 / 121	AV	29.2669	42.8335	34.1		
31	Audi	A4 Avant quattro	2.0L TFSI	2.0 / 121	S8	26.0806	39.7929	30.9		
33	Audi	A4 quattro	2.0L TFSI	2.0 / 121	M6	27.6280	42.4302	32.8		
29	Audi	A4 quattro	2.0L TFSI	2.0 / 121	S8	26.0806	39.7929	30.9		
21	Audi	A5 Cabriolet	2.0L TFSI	2.0 / 121	AV	29.2669	42.8335	34.1		
32	Audi	A5 Cabriolet quattro	2.0L TFSI	2.0 / 121	S8	26.0806	39.7929	30.9		
34	Audi	A5 quattro	2.0L TFSI	2.0 / 121	M6	27.6280	42.4302	32.8		
30	Audi	A5 quattro	2.0L TFSI	2.0 / 121	S8	26.0806	39.7929	30.9		
9	Audi	A6	2.0L TFSI	2.0 / 121	AV	31.4000	46.9000	36.9		
11	Audi	A6 quattro	3.0L TFSI	3.0 / 183	S8	23.1000	37.5000	27.9		
10	Audi	A7 quattro	3.0L TFSI	3.0 / 183	S8	22.9000	37.4000	27.7		
61	Audi	A8	4.2L V8 FSI	4.2 / 254	S8	21.7000	35.2000	26.2		
60	Audi	A8L	4.2L V8 FSI	4.2 / 254	S8	21.7000	35.2000	26.2		
16	Audi	A8L	6.3L W12	6.3 / 384	S8	16.7000	28.3000	20.5		
75	Audi	R8	4.2L V8 FSI	4.2 / 254	M6	13.6735	24.6004	17.1		
73	Audi	R8	4.2L V8 FSI	4.2 / 254	S6	16.0427	27.4569	19.7		
43	Audi	R8	5.2L V10	5.2 / 303	M6	13.7000	23.5099	16.9		
41	Audi	R8	5.2L V10	5.2 / 303	S6	15.5398	24.5419	18.6		
74	Audi	R8 Spyder	4.2L V8 FSI	4.2 / 254	M6	13.6735	24.6004	17.1		
66	Audi	R8 Spyder	4.2L V8 FSI	4.2 / 254	S6	16.0427	27.4569	19.7		
42	Audi	R8 Spyder	5.2L V10	5.2 / 303	M6	13.7000	23.5099	16.9		
40	Audi	R8 Spyder	5.2L V10	5.2 / 303	S6	15.5398	24.5419	18.6		
39	Audi	S4	3.0L TFSI	3.0 / 183	M6	21.5000	34.1000	25.8		
37	Audi	S4	3.0L TFSI	3.0 / 183	S7	21.6000	35.0000	26.1		
56	Audi	S5	4.2L V8 FSI	4.2 / 254	M6	17.3000	29.3000	21.2		
57	Audi	S5	4.2L V8 FSI	4.2 / 254	S6	20.4000	31.0000	24.1		
38	Audi	S5 Cabriolet	3.0L TFSI	3.0 / 183	S7	20.3000	34.0000	24.8		
70	Audi	TT Coupe quattro	2.0L TFSI	2.0 / 121	S6	28.1740	41.7865	33.0		
71	Audi	TT Roadster quattro	2.0L TFSI	2.0 / 121	S6	28.1740	41.7865	33.0		
80	Audi	TT RS Coupe	2.5L T	2.5 / 151	M6	21.2000	34.2000	25.6		
8	Bentley	Mulsanne	6.8L V8	6.8 / 412	S8	12.7000	23.4000	16.0		
12	Bentley - 85	Continental Flying Spur	6.0L W12	6.0 / 366	S6	22.5270	40.5507	28.2		
14	Bentley - 85	Continental GT	6.0L W12	6.0 / 366	S6	23.1199	40.6448	28.7		
88	Bentley - 85	Continental GTC	6.0L W12	6.0 / 366	S6	22.5270	40.5507	28.2		
13	Bentley - 85	Continental Supersports Convertible	6.0L W12	6.0 / 366	S6	23.1199	40.6448	28.7		
8	Bugatti	Veyron	V16	V16 / 488	L7	10.0000	17.9000	12.5		
7	Lamborghini	Aventador Coupe	6.5L V12	6.5 / 396	S7	12.5000	22.7000	15.7		
64	Lamborghini	Gallardo Coupe	5.2L Lamborghini	5.2 / 303	M6	14.0000	24.0000	17.2		
62	Lamborghini	Gallardo Coupe	5.2L Lamborghini	5.2 / 303	S6	16.1000	25.4000	19.3		
165	Lamborghini	Gallardo Spyder	5.2L Lamborghini	5.2 / 303	M6	13.0000	22.6000	16.1		
63	Lamborghini	Gallardo Spyder	5.2L Lamborghini	5.2 / 303	S6	16.0000	25.4000	19.2		
86	Volkswagen	Beetle	2.0L TFSI	2.0 / 121	M6	25.4597	41.4194	30.8		
45	Volkswagen	Beetle	2.0L TFSI	2.0 / 121	S6	26.5000	41.7262	31.7		
87	Volkswagen	Beetle	R5 2.5L SRE	R5 / 151	M5	26.3336	42.6003	31.8		
25	Volkswagen	Beetle	R5 2.5L SRE	R5 / 151	S6	27.1720	38.8543	31.4		
91	Volkswagen	Beetle Convertible	2.0L	2.0 / 121	S6	26.8000	40.6000	31.6		
90	Volkswagen	Beetle Convertible	R5 2.5L SRE	R5 / 151	S6	26.3255	37.8827	30.5		
4	Volkswagen	CC	2.0L TFSI	2.0 / 121	M6	25.7135	41.7856	31.1		
3	Volkswagen	CC	2.0L TFSI	2.0 / 121	S6	27.0121	42.7212	32.4		
58	Volkswagen	CC 4MOTION	3.6L VR6 FSI	3.6 / 219	S6	20.5000	33.5000	24.8		
5	Volkswagen	Eos	2.0L TFSI	2.0 / 121	S6	27.5000	41.5000	32.4		
55	Volkswagen	Golf	2.0L TDI	2.0 / 120	M6	38.7780	60.3377	46.2		
51	Volkswagen	Golf	2.0L TDI	2.0 / 120	S6	39.0595	59.3797	46.2		
28	Volkswagen	Golf	R5 2.5L SRE	R5 / 151	M5	26.2168	44.2259	32.1		
24	Volkswagen	Golf	R5 2.5L SRE	R5 / 151	S6	27.6217	42.4798	32.8		
89	Volkswagen	Golf R	2.0L TFSI	2.0 / 121	M6	23.9000	37.1000	28.5		
46	Volkswagen	GTI	2.0L TFSI	2.0 / 121	M6	25.9213	41.0913	31.1		
44	Volkswagen	GTI	2.0L TFSI	2.0 / 121	S6	29.8054	43.2753	34.7		
79	Volkswagen	Jetta	2.0 MPI	2.0 / 121	M5	28.8000	46.2000	34.7		
78	Volkswagen	Jetta	2.0 MPI	2.0 / 121	S6	28.1000	41.4990	32.9		
54	Volkswagen	Jetta	2.0L TDI	2.0 / 120	M6	38.7780	60.3377	46.2		
50	Volkswagen	Jetta	2.0L TDI	2.0 / 120	S6	39.0595	59.3797	46.2		
27	Volkswagen	Jetta	R5 2.5L SRE	R5 / 151	M5	26.2168	44.2259	32.1		
23	Volkswagen	Jetta	R5 2.5L SRE	R5 / 151	S6	27.6217	42.4798	32.8		
18	Volkswagen	Jetta [GLI]	2.0L TFSI	2.0 / 121	M6	26.5443	45.0964	32.6		
17	Volkswagen	Jetta [GLI]	2.0L TFSI	2.0 / 121	S6	29.4666	44.8970	34.9		
53	Volkswagen	Jetta SportWagen	2.0L TDI	2.0 / 120	M6	38.7780	60.3377	46.2		
49	Volkswagen	Jetta SportWagen	2.0L TDI	2.0 / 120	S6	37.6000	56.2000	44.2		
26	Volkswagen	Jetta SportWagen	R5 2.5L SRE	R5 / 151	M5	26.2168	44.2259	32.1		
22	Volkswagen	Jetta SportWagen	R5 2.5L SRE	R5 / 151	S6	27.6217	42.4798	32.8		
84	Volkswagen	Tiguan	2.0L TFSI	2.0 / 121	M6	21.7000	35.8000	26.4		
83	Volkswagen	Tiguan	2.0L TFSI	2.0 / 121	S6	27.2963	37.1906	31.0		
VOLKSWAGEN GROUP Total Projected Units										
AMFA unadj unrounded with FFV (MPG)										
AMFA unadj rounded with FFV (MPG)										



## VWGoA Domestic Category Passenger Car

INDEX #	Brand	Carline	Engine	DISP	Trans	CITY	HWY	COMB Round	Model Type Sales	Weighted Sales/MPG
48	Volkswagen	Passat	2.0L TDI	2.0 / 121	M6	38.2000	62.8000	46.4	(b) (4)	
76	Volkswagen	Passat	2.0L TDI	2.0 / 121	S6	37.9000	56.8000	44.6		
19	Volkswagen	Passat	3.6L VR6 FSI	3.6 / 219	S6	23.9000	37.3000	28.5		
2	Volkswagen	Passat	R5 2.5L SRE	R5 / 151	M5	26.2361	43.3967	31.9		
1	Volkswagen	Passat	R5 2.5L SRE	R5 / 151	S6	26.9263	40.6206	31.7		
					VOLKSWAGEN GROUP Total Projected Units					
					Baseline unadj unrounded (MPG)					
					Baseline unadj rounded (MPG)					



# Ex. 4 - CBI

# **Ex. 4 - CBI**

# Ex. 4 - CBI

# **Ex. 4 - CBI**

# Ex. 4 - CBI

**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Wed 1/8/2014 5:51:42 PM  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674) - Thanks for the correction; NNT0

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Wednesday, January 08, 2014 6:12 AM  
**To:** Good, David  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Hi Dave;

Please find attached the corrected 2012 VWGoA Final Passenger Car CAFE cover letter. If you have any questions please contact me. I will enter this same file into Verify today.

Richard

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Thursday, January 02, 2014 3:38 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** French, Roberts; Schmidt, Oliver (EEO); Snyder, Jim; Kata, Leonard (EEO)  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Richard,

Happy New Year, etc.

When you get a chance, please email me a copy of the revision/addendum to the attached VW CAFE letter (and enter it into the Verify document module).

Thanks

**From:** Thomas, Richard (EEO) [<mailto:Richard.Thomas@vw.com>]  
**Sent:** Thursday, December 26, 2013 9:05 AM  
**To:** Good, David  
**Cc:** French, Roberts; Schmidt, Oliver (EEO); Snyder, Jim; Kata, Leonard (EEO)  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Hi Dave;

I checked the files and found that our letter you attached contained a typo, the correct Import Passenger Car CAFE reformed standard should be 33.7 MPG as you see from the Verify processing report, and not the 30.7 MPG. I will revise the letter, if you prefer, when I am back in the office on January 7<sup>th</sup>.

Happy New Year!

Richard

**From:** Good, David [<mailto:good.david@epa.gov>]  
**Sent:** Monday, December 23, 2013 2:34 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** French, Roberts; Schmidt, Oliver (EEO); Snyder, Jim  
**Subject:** 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Richard,

While reviewing VW's 2012 Passenger Car CAFE letter & the data in Verify, I noticed a discrepancy in the VW letter (attached) and the Verify Report (attached) for the Import passenger car CAFE standard. Page 1 of VW letter indicates an Import Pass Car standard of 30.7 mpg while the Verify report indicates a manufacturer input CAFE standard of 33.674.

Your CAFE letter didn't supply the footprint standards calculations, so I can't double check the standard listed on page 1 of the letter.

Based on the footprint data which you entered into Verify, Verify calculated a CAFE standard of 33.7 mpg.

Please advise.

Thanks

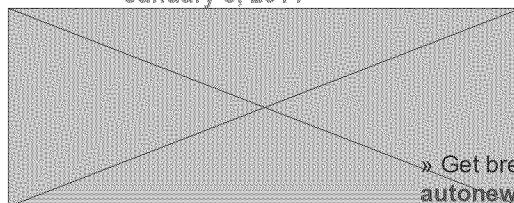


**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Wed 1/8/2014 10:25:57 PM  
**Subject:** DAILY: Ford's next dividend hike could see family reap \$34 million | Passat-based VW concept gets 42 mpg | Lexus RC F guns for high-performance big boys | How Nissan thought outside the Amazon box

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UPDATED: 1/8/14 4:28 pm ET - adds stock close  
1:17 pm U.S. ET | Jan 8

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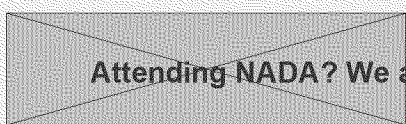
## **2014 DETROIT AUTO SHOW**

### **Passat-based VW concept gets 42 mpg**

UPDATED: 1/8/14 12:09 pm ET - adds link  
12:00 pm U.S. ET | Jan 8

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UPDATED: 1/8/2014 12:49 pm ET - adds stock close  
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UPDATED: 1/7/14 7:08 pm ET  
5:55 pm U.S. ET | Jan 7

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UPDATED: 1/8/14 12:15 pm ET  
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**» First Ram 1500  
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UPDATED: 1/8/14 12:54 pm ET - adds link  
6:30 am U.S. ET | Jan 8

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3:54 pm U.S. ET | Jan 8

**Lamborghini unveils Gallardo  
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12:01 am U.S. ET | Jan 8

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4:17 pm U.S. ET | Jan 8

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9:21 am U.S. ET | Jan 8

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12:15 am U.S. ET | Jan 8

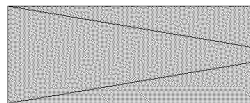
**Economist: Used-vehicle  
prices will remain healthy, but  
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3:03 pm U.S. ET | Jan 8

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UPDATED: 1/8/14 4:25 pm ET - adds stock  
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3:30 pm U.S. ET | Jan 8

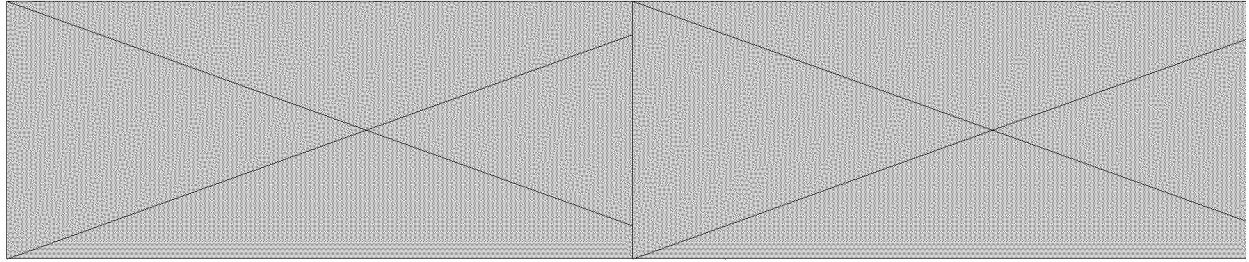


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**To:** Good, David[good.david@epa.gov]  
**From:** Schmidt, Oliver (EEO)  
**Sent:** Thur 1/9/2014 4:14:31 PM  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Hello Dave,

our Error was just a Typo, but this is what happens if you transfer data from a computer system to a sheet of paper.

This is why I asked about the redundancy. But I understand your fear of false data in Verify.

Oliver

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Donnerstag, 9. Januar 2014 10:36  
**To:** Schmidt, Oliver (EEO); Thomas, Richard (EEO)  
**Cc:** French, Roberts; Snyder, Jim; Kata, Leonard (EEO)  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Oliver,

Here's my short answer (not a legal answer from an EPA attorney):

The written CAFE/GHG model year report is required by EPA regulations. It contains information and statements which are not in EPA's Verify database (and can't be easily added to EPA's database). The data in Verify (including the manufacturer's official GHG & CAFE values, GHG & CAFE standards, etc) can be easily changed by a non supervisory company employee at any time---whereas a letter signed by a the a manager is not easily changed and provides the manufacturer's "official" CAFE/GHG values to EPA.

I have seen many cases where the data in Verify does not agree with the manufacturer's model year report values (in their official CAFE/GHG letter). [That review is part of my job, e.g. when I approve a CAFE/GHG calculation for EPA management's signature.]

Hope this helps.

Sorry to be so picky and request that VW revise their 2012 CAFE standard in your model year report---but I couldn't be absolutely sure whether your letter was correct or whether the value in Verify was correct.

Thanks again for making the revision to your letter.

Dave

**From:** Schmidt, Oliver (EEO) [<mailto:Oliver.Schmidt@vw.com>]  
**Sent:** Wednesday, January 08, 2014 1:43 PM  
**To:** Good, David; Thomas, Richard (EEO)  
**Cc:** French, Roberts; Snyder, Jim; Kata, Leonard (EEO)  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Hello,

i hope you all had a good start to the new year.

May I ask one simple question ? Why do we need to submit a written report if the data is already available in Verify ?

Wouldn't it make everybodys life much easier if there would be only one report ?

Oliver

**Oliver Schmidt**

General Manager

Engineering and Environmental Office

**VOLKSWAGEN Group of America, Inc.**

3800 Hamlin Road  
Auburn Hills, MI 48326  
Phone: (248) 754-4201  
Cell: (248) 760-6180  
FAX: (248) 754-4207  
E-Mail: [Oliver.Schmidt@vw.com](mailto:Oliver.Schmidt@vw.com)

**From:** Good, David [<mailto:good.david@epa.gov>]

**Sent:** Donnerstag, 2. Januar 2014 15:38

**To:** Thomas, Richard (EEO)

**Cc:** French, Roberts; Schmidt, Oliver (EEO); Snyder, Jim; Kata, Leonard (EEO)

**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Richard,

Happy New Year, etc.

When you get a chance, please email me a copy of the revision/addendum to the attached VW CAFE letter (and enter it into the Verify document module).



Thanks

**From:** Thomas, Richard (EEO) [<mailto:Richard.Thomas@vw.com>]  
**Sent:** Thursday, December 26, 2013 9:05 AM  
**To:** Good, David  
**Cc:** French, Roberts; Schmidt, Oliver (EEO); Snyder, Jim; Kata, Leonard (EEO)  
**Subject:** RE: 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Hi Dave;

I checked the files and found that our letter you attached contained a typo, the correct Import Passenger Car CAFE reformed standard should be 33.7 MPG as you see from the Verify processing report, and not the 30.7 MPG. I will revise the letter, if you prefer, when I am back in the office on January 7<sup>th</sup>.

Happy New Year!

Richard

**From:** Good, David [<mailto:good.david@epa.gov>]  
**Sent:** Monday, December 23, 2013 2:34 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** French, Roberts; Schmidt, Oliver (EEO); Snyder, Jim  
**Subject:** 2012 CAFE VW Model Year Report -Import Pass Car CAFE standard in VW letter (30.7mpg) disagrees with Verify (33.674)

Richard,

While reviewing VW's 2012 Passenger Car CAFE letter & the data in Verify, I noticed a discrepancy in the VW letter (attached) and the Verify Report (attached) for the Import

passenger car CAFE standard. Page 1 of VW letter indicates an Import Pass Car standard of 30.7 mpg while the Verify report indicates a manufacturer input CAFE standard of 33.674.

Your CAFE letter didn't supply the footprint standards calculations, so I can't double check the standard listed on page 1 of the letter.

Based on the footprint data which you entered into Verify, Verify calculated a CAFE standard of 33.7 mpg.

Please advise.

Thanks

Section 12VW	Pg 4	Vehicle Test Parameters	Engine Code	R.CH-No.:	Revision Date
Common Section	All	All	All		02-24-2013

### Exhaust Test Parameters

Model / Carline	Engine Displ./HP	Engine Code	Tires	TM / OD #	Axle	ETW	Road Track Coefficients			TCDT	Fuel tank Cap.	Fan Pos.	Shift Sched. I.D.	Test Fuel	DF source
							F0	F1	F2						
	[liter/hp]					[lbs]	[lb ft]	[lb ft / mph]	[lb ft / (mph) <sup>2</sup> ]	[sec]	40% 100% []				

Golf 2 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3375	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Golf 4 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3375	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Jetta	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3500	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Golf 2 door	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3375	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
Golf 4 door	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3500	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
Jetta	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3625	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
Jetta	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3625	37	0.32	0.0188	-	22.0 55.0	A	L6	Cold CO	5V257

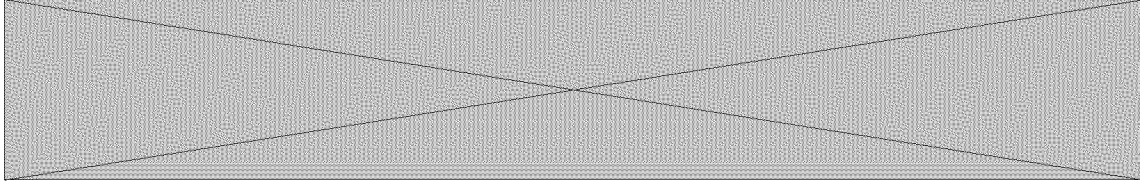
Jetta Hybrid	1.4 / 150	CNLA	195/65R15	L6 / 2	1) 4.438 2) 3.227	3625	124	0.15	0.0278	23.61	45 <sup>18</sup>	A	L6	Tier 2	DVPHE
Jetta Hybrid	1.4 / 150	CNLA	195/65 R15	L6 / 2	1) 4.438 2) 3.227	3625	136	0.165	0.0306	-	45 <sup>18</sup>	A	L6	Cold CO	DVPHE

#) OD = Overdrive, 1 =final gear ratio >1 ; 2 =final gear ratio < 1

\*) value = pre stage x axle

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Thur 1/9/2014 5:03:18 PM  
**Subject:** Green Car Report Daily Headlines

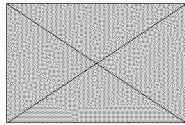
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The latest from your friends at GCR:

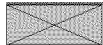
## Nissan Leaf Demand, Mazda 6 Diesel Delay, Car-Free Streets: Today's Car News

Jan 09, 2014 04:37 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)

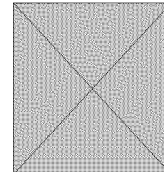
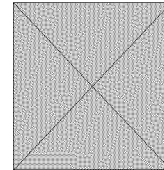


Today on Green Car Reports: Hamburg, Germany, aims for car-free streets in 20 years, soaring demand could lead to a doubling of U.S. Nissan Leaf electric-car production, and the Mazda 6 diesel sedan will be further delayed, according to the company. All this and more on Green Car Reports. The Volkswagen Passat BlueMotion Concept--a high-mpg...

[comments](#) | [read more](#)

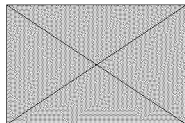


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## 2015 Mazda 6 Diesel Sedan Further Delayed, Company Says

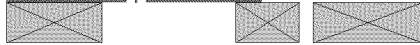
Jan 09, 2014 04:13 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



Bad news for fans of diesel passenger cars, it seems. Mazda said today that the launch of its new SkyActiv-D diesel engine would be delayed past the previous date of sometime this spring. A terse press release attributed the delay to the time required for "further development...to deliver the right balance between fuel

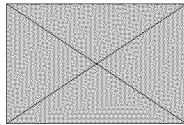
economy and...

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## Will Mitsubishi Mirage Minicar Add Sedan Model For 2015?

Jan 09, 2014 03:49 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



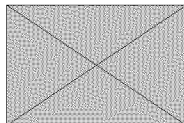
Hatchbacks may bring up bad memories for some people. Those who want a fuel-efficient small car--but were traumatized by the Chevrolet Vega, Ford Pinto, or any number of Japanese econoboxes of the Eighties or Nineties--may be interested in a sedan version of the Mitsubishi Mirage minicar. Mitsubishi Canada has released teaser images of a Mirage...

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## With Demand Soaring, Nissan Leaf U.S. Production Could Double This Year

Jan 09, 2014 03:35 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



With the 2014 Nissan Leaf going on sale this week and next, Nissan is poised to expand production and dramatically boost sales of its U.S.-built battery-electric hatchback. And if its CEO has his way, sales will double in 2014, from the 22,610 Leafs delivered in 2013 to 40,000 or more, perhaps as many as 50,000. Nissan CEO Carlos Ghosn told CNBC...

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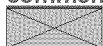
## Elio Takes Another Step Toward Building 3-Wheeler In Ex-GM Plant

Jan 09, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



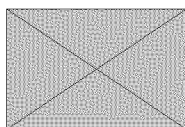
Many in the green car industry are watching startup automaker Elio Motors with interest. The company has big plans for its small three-wheeled car, as well as thousands of fans on social media networks and plenty of names on the order list. Now, Elio also has a place to build its car, finally striking a deal to build its fuel-efficient tandem...

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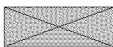
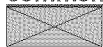
## Hamburg, Germany, Aims For Car-Less Streets In 20 Years

Jan 09, 2014 12:40 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



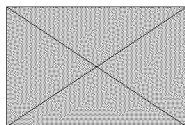
Urban centers are very different in the U.S. to those in Europe, its more recent history and greater expanses of space allowing wide, open and sprawling spaces to develop—a far cry from the older and more tightly-packed cities of Europe. It's this difference that makes cities free of cars a much more realistic prospect in Europe than it is in the...

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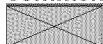
## New-Car Average Fuel Economy Rose To 24.8 MPG In 2013

Jan 09, 2014 12:20 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



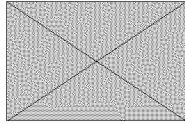
The numbers are in, and it turns out that 2013 was another record year for the average fuel economy of new vehicles. Researchers at the University of Michigan Transportation Research Institute (UMTRI) say the sales-weighted average fuel economy of all new vehicles sold in the United States last year was 24.8 mpg, fully 1 mpg higher than the 23.8...

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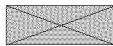
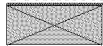
## Tesla Supercharger Quick Charging Stations Expand Beyond Coasts

Jan 09, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



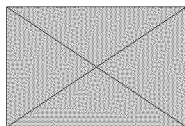
Tesla Motors is taking its Supercharger fast-charging network to a place it's never been: Wyoming. The electric-car company plopped a Supercharger station down in Lusk, a town in the least-populated county of the least-populated state in the country, according to an Associated Press report (via the Seattle Post-Intelligencer). The Equality State's...

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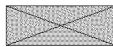
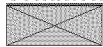
## 2014 Nissan Leaf Electric Car: 84-Mile Range, RearView Monitor Standard

Jan 08, 2014 08:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



The 2014 Nissan Leaf is now rolling off the assembly lines in Tennessee, and the first examples should arrive at dealerships this week or next. Now, after a long wait, we have information on the updates to the electric car for the new model year. Rated range rises to 84 miles Most importantly to new buyers, the range of the 2014 Leaf is now listed...

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**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Giles, Michael (EEO)[michael.giles@vw.com]; Allen, Gregory[Gregory.Allen@vw.com]  
**From:** Rodgers, William (EEO)  
**Sent:** Thur 1/9/2014 5:38:23 PM  
**Subject:** RE: equivalent test weight and target coefficients for a vw jetta hybrid

Hello Jim,

The Common application is clearly a typo. I will contact the factory and get it corrected for the upcoming Final submission (and 2014).

The Section 7 CSI in the test group application appears to show the correct values as also shown below:

Target Coef A (lbf)	Target Coef B (lbf/mph)	Target Coef C (lbf/mph^2)
27.876	0.05426	0.01618

Our Certification test vehicle had the ESP permanently deactivated so we will have to inquire about the procedure for deactivating it in a production car and get back with you hopefully tomorrow.

Regards,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

william.rodgers@vw.com

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]  
**Sent:** Thursday, January 09, 2014 12:00 PM  
**To:** Rodgers, William (EEO)  
**Subject:** FW: equivalent test weight and target coefficients for a vw jetta hybrid

Hi Bill, Happy New Year. Someone from the other division is testing a Jetta hybrid and asked for target coefficients. I sent them the official numbers from the 2013 common file w/o looking at them. The ABCs for the Hybrid are really high, not the ones we used for testing. Now that I look at them, the Target ABCs for the hybrid (that we used) are 20% lower than the regular hybrid. Can you find why the Hybrid's road load is lower than the standard version? Or is that table in the common section totally wrong?

Separate question, They are getting ABS and Traction lights. What is the procedure to get rolls mode? I don't recall this running 4 wheel dyno.

**From:** Doorlag, Mark  
**Sent:** Friday, December 20, 2013 1:17 PM  
**To:** Snyder, Jim  
**Cc:** Wright, DavidA  
**Subject:** RE: equivalent test weight and target coefficients for a vw jetta hybrid

jim,

- the track coefficient units are listed using "lb ft." is this just a typo and should it be "lbf."

- it is also surprising to see such large a large target A coefficient, especially in comparison to the other jettas. this doesn't seem right.

- if i get the info from the 2013 data found at <http://www.epa.gov/otaq/tcldata.htm> it shows the same ETW but it gives the following track coefficients...

Target Coef A (lbf)	Target Coef B (lbf/mph)	Target Coef C (lbf/mph^2)
27.876	0.05426	0.01618

could vw be contacted to confirm that the values above are correct? or do you have another suggestion?

mark

**From:** Snyder, Jim  
**Sent:** Tuesday, December 17, 2013 6:52 PM  
**To:** Doorlag, Mark  
**Cc:** Wright, DavidA  
**Subject:** RE: equivalent test weight and target coefficients for a vw jetta hybrid

From VW's FOI\_DVWXB\_COMMON file. The 1<sup>st</sup> line is for room temp conditions, the 2<sup>nd</sup> line is for 20F Cold testing.

Section 12VW Pg 4	Vehicle Test Parameters	Engine Code	R.CH-No.:	Revision Date
Common Section	All	All		02-24-2013

#### Exhaust Test Parameters

Model / Carline	Engine Displ./HP	Engine Code	Tires	TM / OD #	Axle	ETW	Road Track Coefficients			TCDT	Fuel tank Cap.	Fan Pos.	Shift Sched. I.D.	Test Fuel	D
							F0	F1	F2						
	[liter/hp]					[lbs]	[lb ft]	[lb ft / mph]	[lb ft / (mph) <sup>2</sup> ]	[sec]	40% 100% []				
Golf 2 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3.647	3375	30	0.20	0.0186	-	22.0 55.0	A	M5-1	Tier 2	5V
Golf 4 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3.647	3375	30	0.20	0.0186	-	22.0 55.0	A	M5-1	Tier 2	5V
Jetta	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3.647	3500	30	0.20	0.0186	-	22.0 55.0	A	M5-1	Tier 2	5V
Golf 2 door	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3.504	3375	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V
Golf 4 door	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3.504	3500	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V
Jetta	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3.504	3625	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V
Jetta	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3.504	3625	37	0.32	0.0188	-	22.0 55.0	A	L6	Cold CO	5V
Jetta Hybrid	1.4 / 150	CNLA	195/65 R15	L6 / 2	1) 4.438 2) 3.227	3625	124	0.15	0.0278	23.61	18 45	A	L6	Tier 2	DV
Jetta Hybrid	1.4 / 150	CNLA	195/65 R15	L6 / 2	1) 4.438 2) 3.227	3625	136	0.165	0.0306	-	18 45	A	L6	Cold CO	DV

#) OD = Overdrive, 1 =final gear ratio >1 ; 2 =final gear ratio < 1

\*) value = pre stage x axle

From: Doorlag, Mark

Sent: Monday, December 09, 2013 2:06 PM

To: Snyder, Jim

Cc: Wright, DavidA

Subject: equivalent test weight and target coefficients for a vw jetta hybrid

jim,

can you help me out with a ETW and target coefficients for a vw jetta hybrid? here is the more detailed info...

2013 vw jetta hybrid

vin

**Ex. 6**

test group

DVWXV01.4PHE

tires

continental 195/65R15 91H

thanks, mark

Section 12VW	Pg 4	Vehicle Test Parameters	Engine Code	R.CH-No.:	Revision Date
Common Section	All	All	All		02-24-2013

### Exhaust Test Parameters

Model / Carline	Engine Displ./HP	Engine Code	Tires	TM / OD #	Axle	ETW	Road Track Coefficients			TCDT	Fuel tank Cap.	Fan Pos.	Shift Sched. I.D.	Test Fuel	DF source
							F0	F1	F2						
	[liter/hp]					[lbs]	[lb ft]	[lb ft / mph]	[lb ft / (mph) <sup>2</sup> ]	[sec]	40% 100% []				

Golf 2 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3375	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Golf 4 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3375	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Jetta	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3500	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Golf 2 door	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3375	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
Golf 4 door	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3500	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
Jetta	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3625	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
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Jetta Hybrid	1.4 / 150	CNLA	195/65R15	L6 / 2	1) 4.438 2) 3.227	3625	124	0.15	0.0278	23.61	45 <sup>18</sup>	A	L6	Tier 2	DVPHE
Jetta Hybrid	1.4 / 150	CNLA	195/65 R15	L6 / 2	1) 4.438 2) 3.227	3625	136	0.165	0.0306	-	45 <sup>18</sup>	A	L6	Cold CO	DVPHE

#) OD = Overdrive, 1 =final gear ratio >1 ; 2 =final gear ratio < 1

\*) value = pre stage x axle

Section 12VW	Pg 4	Vehicle Test Parameters	Engine Code	R.CH-No.:	Revision Date
Common Section	All	All	All		02-24-2013

### Exhaust Test Parameters

Model / Carline	Engine Displ./HP	Engine Code	Tires	TM / OD #	Axle	ETW	Road Track Coefficients			TCDT	Fuel tank Cap.	Fan Pos.	Shift Sched. I.D.	Test Fuel	DF source
							F0	F1	F2						
	[liter/hp]					[lbs]	[lb ft]	[lb ft / mph]	[lb ft / (mph) <sup>2</sup> ]	[sec]	40% 100% []				

Golf 2 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3375	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Golf 4 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3375	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Jetta	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3,647	3500	30	0.20	0.0188	-	22.0 55.0	A	M5-1	Tier 2	5V257
Golf 2 door	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3375	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
Golf 4 door	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3500	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
Jetta	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3625	33	0.29	0.0171	-	22.0 55.0	A	L6	Tier 2	5V257
Jetta	2.5 / 150	BGQ	205/55 R16	L 6 / 2	3,504	3625	37	0.32	0.0188	-	22.0 55.0	A	L6	Cold CO	5V257

Jetta Hybrid	1.4 / 150	CNLA	195/65R15	L6 / 2	1) 4.438 2) 3.227	3625	124	0.15	0.0278	23.61	45 <sup>18</sup>	A	L6	Tier 2	DVPHE
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\*) value = pre stage x axle

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Snyder, Jim  
**Sent:** Thur 1/9/2014 6:24:23 PM  
**Subject:** RE: equivalent test weight and target coefficients for a vw jetta hybrid

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**Cc:** Giles, Michael (EEO); Allen, Gregory  
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Hi Jim,

Attached is the Jetta Hybrid ESP deactivation procedure requested.

Regards,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)



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Our Certification test vehicle had the ESP permanently deactivated so we will have to inquire about the procedure for deactivating it in a production car and get back with you hopefully tomorrow.

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Engineering and Environmental Office

Auburn Hills, MI

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[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

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**Cc:** Wright, DavidA

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mark

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**To:** Doorlag, Mark  
**Cc:** Wright, DavidA  
**Subject:** RE: equivalent test weight and target coefficients for a vw jetta hybrid

From VW's FOI\_DVWXB\_COMMON file. The 1<sup>st</sup> line is for room temp conditions, the 2<sup>nd</sup> line is for 20F Cold testing.

Section 12VW Pg 4	Vehicle Test Parameters	Engine Code	R.CH-No.:	Revision Date
Common Section	All	All		02-24-2013

#### Exhaust Test Parameters

Model / Carline	Engine Displ./HP	Engine Code	Tires	TM / OD #	Axle	ETW	Road Track Coefficients			TCDT	Fuel tank Cap.	Fan Pos.	Shift Sched. I.D.	Test Fuel	D
							F0	F1	F2						
	[liter/hp]					[lbs]	[lb ft]	[lb ft / mph]	[lb ft / (mph) <sup>2</sup> ]	[sec]	40% 100% []				
Golf 2 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3.647	3375	30	0.20	0.0186	-	22.0 55.0	A	M5-1	Tier 2	5V
Golf 4 door	2.5 / 150	BGQ	205/55 R16	M 5 / 2	3.647	3375	30	0.20	0.0186	-	22.0 55.0	A	M5-1	Tier 2	5V
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From: Doorlag, Mark

Sent: Monday, December 09, 2013 2:06 PM

To: Snyder, Jim

Cc: Wright, DavidA

Subject: equivalent test weight and target coefficients for a vw jetta hybrid

jim,

can you help me out with a ETW and target coefficients for a vw jetta hybrid? here is the more detailed info...

2013 vw jetta hybrid

vin

**Ex. 6**

test group

DVWXV01.4PHE

tires

continental 195/65R15 91H

thanks, mark

Section 12VW	Pg 4	Vehicle Test Parameters	Engine Code	R.CH-No.:	Revision Date
Common Section	All	All	All		02-24-2013

### Exhaust Test Parameters

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							F0	F1	F2						
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**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Rodgers, William (EEO)  
**Sent:** Thur 1/9/2014 7:15:46 PM  
**Subject:** RE: equivalent test weight and target coefficients for a vw jetta hybrid

Jim,

After checking them against the CSI's in the 2013/14 test group applications I'm not seeing any further coefficient discrepancies. It is common that we list worst case coefficients over multiple models of the same test group and engine/trans configuration such as Golf and Jetta, explaining the duplicates seen.

Thanks,

Bill

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Section 12VW Pg 4	Vehicle Test Parameters	Engine Code	R.CH-No.:	Revision Date
Common Section	All	All		02-24-2013

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**Ex. 6**

test group

DVWXV01.4PHE

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**To:** French, Roberts[french.roberts@epa.gov]  
**Cc:** Good, David[good.david@epa.gov]; **Ex. 7**  
**From:** **Ex. 7**  
**Sent:** Fri 1/10/2014 2:21:44 PM  
**Subject:** RE: CO2 label values for some models

Hello Rob;

I looked into our labels indexes 58 and 59 and found that the calculated 5-cycle CO2 values transposed from my 5-cycle calculator to my Excel worksheet for the base level and model type calculation was not correct. All CO2 values were incorrect. The correct 5-cycle rounded CO2 values for both the Audi S4 and Audi S5 are: city 519, highway 341 and 439 for the combined. I have made this correction to those two indexes in Verify.

Since the values for the fuel economy are entered into a calculator separately from the CO2 and there is obviously no checks by the EPA audit system the values were not flagged by the EPA system and we had no internal system to make that comparison either. I will now add a quick check to make this rough comparison between fuel economy and CO2 on my worksheet for model type calculations, hopefully to prevent this error from occurring again.

The second case involves the Volkswagen Eos model (index 78) that was carried over from 2010 model year whereby we had to ask the factory to provide the bag CO2 data for the old original tests that were originally sent to us without bag CO2 data when we started labeling these models for 2013 and the new fuel economy label. I am trying to track down the bag information for that configuration because from the values I had at that time, it resulted in the values I submitted into Verify. I suspect the bag CO2 values were not right from Germany. This may take some time and I will be out of the office next week.

If you have any comments or suggestions please contact me today.

Thanks,

**Ex. 7**

**Ex. 7**

VOLKSWAGEN Group of America, Inc.

**Ex. 7**

**From:** French, Roberts [mailto:french.roberts@epa.gov]  
**Sent:** Thursday, January 09, 2014 1:27 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** CO2 label values for some models

Richard,

A staffer here at EPA is working on listing qualifying vehicles for low-GHG federal fleet purchases, where the qualifying is based on the label CO2 value. She ran a quick check for consistency between CO2 and MPG values, using the simple 8887 grams/gallon figure that we use for such conversions. This process identified a few outliers among a number of companies, and we'd like to try to track down errors (if any) and repair them.

The first case for VW is the Audi S4 and S5 (Model Type Indices 58 and 59). On the second page of the attached document you will see the issues outlined in my comments. We first identified that the Combined value of 403 g/mi seemed inconsistent with the unrounded MPG value of 20.1767 (we would expect something more along the lines of 440 g/mi). Then we noticed that the 5-cycle adjusted City value is actually lower than the unadjusted value



(443>441.7). Based on the test data I have access to in Verify, which does not include the bag-by-bag CO2 values, I calculated that the adjusted City value should be more like 521 g/mi. This doesn't jibe with the MPG values at the top of page 3, which show decreasing MPG (as expected). So something is going on there.

The second case is the VW Eos (Model Type Index 78). We think there may be something going on with the 5-cycle Highway calculation, where our transformation using 8887 is about 13% off from the highway value of 257 g/mi in Verify. Using the data available to me I get a Highway adjusted value of about 295 g/mi, whereas you reported in Verify a value of 256.6 g/mi. I couldn't pinpoint anything specific that might have led to this difference, but maybe you can find out.

If you could dig into these a little and let me know what you find it would be very helpful. I know that measurement error, rounding, and fuel qualities can all make CO2 bounce around for a given MPG value (i.e., 25 MPG is rarely exactly 355 g/mi), but we'd like to try to find out how we can have some business rules or thresholds in Verify that snag actual errors if we can.

Best Wishes for a Happy New Year,

Rob

**Roberts W. French, Jr.**

**Environmental Protection Specialist**

**Compliance Division**

National Vehicle and Fuel Emissions Laboratory

2000 Traverwood Drive

Ann Arbor, Michigan 48105

Phone: (734) 214-4380

Fax: (734) 214-4053

**From:** Kaul, Meetu  
**Required Attendees:** Miller, Anthony; Wick, Anne  
**Location:** We'll call Tony from Anne's office  
**Importance:** Normal  
**Subject:** H&S Penalty Approach (defeat devices generally)  
**Start Date/Time:** Tue 1/14/2014 6:00:00 PM  
**End Date/Time:** Tue 1/14/2014 7:00:00 PM

When: Tuesday, January 14, 2014 1:00 PM-2:00 PM (GMT-05:00) Eastern Time (US & Canada).  
Where: We'll call Tony from Anne's office

Note: The GMT offset above does not reflect daylight saving time adjustments.

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

**Ex. 5, 7**

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Giles, Michael (EEO)[michael.giles@vw.com]  
**From:** Allen, Gregory  
**Sent:** Fri 1/10/2014 4:59:46 PM  
**Subject:** Decision Information Uploaded to Verify

Hello Jim,

A confirmatory test decision was uploaded to Verify for the MY2015 Audi S8, Testgroup: FVGAV04.0NUA and Vehicle I.D: FNUA-S8Q.

Please let me know if you have any questions.

Best Regards / Mit freundlichen Grüßen,

Greg Allen

Emissions Certification Engineering Analyst

Engineering and Environmental Office

Volkswagen Group of America, Inc.

3800 Hamlin Road

Auburn Hills, MI 48326

U.S.A.

Phone: (248) 754-4209

E-mail: [Gregory.Allen@vw.com](mailto:Gregory.Allen@vw.com)



**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]; Allen, Gregory[Gregory.Allen@vw.com];  
Giles, Michael (EEO)[michael.giles@vw.com]  
**From:** Rodgers, William (EEO)  
**Sent:** Mon 1/13/2014 12:17:09 PM  
**Subject:** VW Group - Revised Certificate needed

Hello Jim,

I had to revised the Application and request a new certificate for test group FVGAV02.0AUA due to a corrected Manufacturer Division that should now indicate Audi. Please process this request as soon as possible so we can complete the fuel economy labelling on these models soon to be introduced.

Thanks,

Bill Rodgers

VWGoA EEO

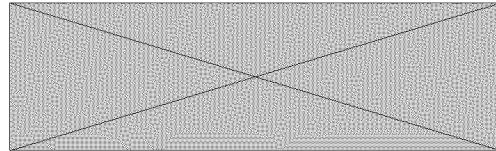
(248) 754-4219

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 1/13/2014 1:16:14 PM  
**Subject:** First Shift: Ford F-150 drops 700 lbs.

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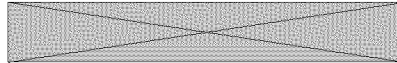
**January 13, 2014**



**F-150 in fighting trim? »**

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..

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Rodgers, William (EEO)  
**Sent:** Mon 1/13/2014 4:21:02 PM  
**Subject:** Corrected Cert Request

Hi Jim,

I corrected the Application and resubmitted the Certification Request for the Audi TT/TTS test group FVGAV02.0AUA. Thanks

Bill Rodgers

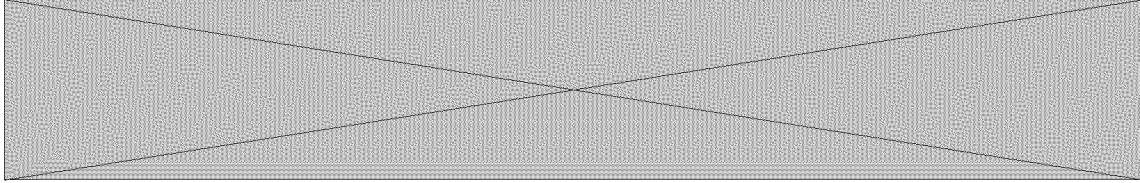
VWGoA EEO

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**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Mon 1/13/2014 5:01:47 PM  
**Subject:** Green Car Report Daily Headlines

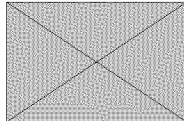
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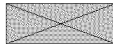
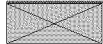
## **Detroit Auto Show 2014 Day One, Fisker Auction, GM Pickup Recall: Today's Car News**

Jan 13, 2014 04:20 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



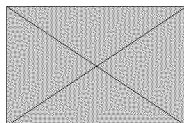
Today on Green Car Reports: The 2014 Detroit Auto Show is upon us, and we're bringing you all the details on the (few) greener vehicles from the show. The big news is a more efficient 2015 Ford F-150, plus the Audi Allroad Shooting Brake concept. All this and more on Green Car Reports. Tesla Motors will upgrade electric-car wall chargers for...

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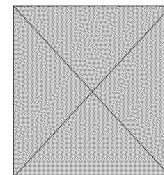
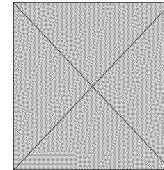
## **Bankruptcy Judge Orders Remains Of Fisker Auto To Be Auctioned**

Jan 13, 2014 12:25 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



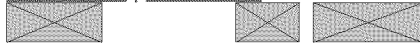
After a court hearing on Friday, the fate of Fisker Automotive is even more up in the air, and as uncertain as ever. U.S. Bankruptcy Judge Kevin Gross ordered a competitive auction of Fisker's assets, according to the Associated Press, after a last-minute bid by Chinese

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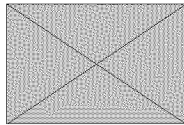
auto-parts conglomerate Wanxiang. Gross rejected investor Hong Kong-based...

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## 2014 Chevy, GMC Pickups Recalled For Cylinder- Deactivation Issue

Jan 13, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



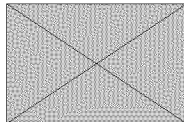
General Motors' redesigned 2014 full-size pickup trucks have only been on the market for a few months, but now they're being called back to the dealer to fix a potential flaw. Certain 2014 Chevrolet Silverado 1500 and GMC Sierra 1500 models are being recalled due to a fire risk associated with their cylinder-deactivation systems, the Detroit News...

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## 2014 Detroit Auto Show: Audi Allroad Shooting Brake Full Details

Jan 13, 2014 11:22 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



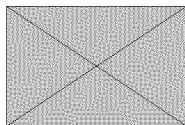
Audi has a plug-in hybrid concept vehicle for most months of the year, and January's, on show at the Detroit Auto Show, is the Audi Allroad Shooting Brake concept. From the car's moniker alone you can deduce most of it's key attributes. "Allroad" means it has pseudo-off road crossover styling cues, including a subtly raised ride height and plastic...

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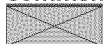
## 2015 Ford F-150: Full Details From Detroit Auto Show

Jan 13, 2014 10:42 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Ford has released full details on the new 2015 F-150 pickup, and with a host of new technologies and engines, it may be the most advanced full-size truck ever. The company says it's tougher, smarter, and more capable than ever before--and looking at the styling, it's hard to argue on the first point. We're aware that many of our readers are less...

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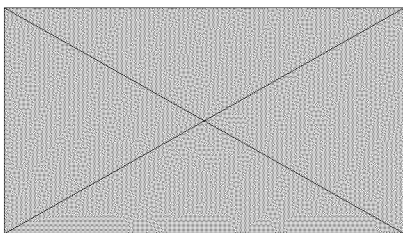
**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** WardsAuto Coverage of NAIAS  
**Sent:** Mon 1/13/2014 8:17:31 PM  
**Subject:** Monday NAIAS Daily: GM Sweeps Car and Truck of Year Awards

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## WardsAuto Coverage of NAIAS

January 13, 2014

### GM Unleashes '15 Chevy Corvette Z06



General Motors North America President Mark Reuss says the performance, technology and design of the new Z06 rivals most exotic supercars without exotic supercar fuel consumption.

[FULL ARTICLE](#)

### Gallery: '15 Chevrolet Corvette Z06 and C7.R

The '15 Chevrolet Corvette bows at the 2014 North American International Auto Show boasting a 625-hp V-8 engine and radical aerodynamics. The sports car is joined by the new C7.R race car.

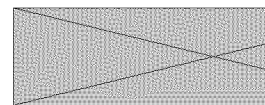
### '15 GMC Canyon Second Blast From GM in Small Pickup Market

The redesigned Canyon receives fresh exterior and interior styling, an all-new architecture to underpin the truck, a choice of three high-tech powertrains and a long list of available lifestyle accessories.

[FULL ARTICLE](#)

### VW Midsize CUV Gets Green Light for 2016

A decision on where to build the new model should come within the next two weeks, the automaker's top U.S. executive tells *WardsAuto*.

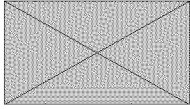


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## **Autoline Live: Supplier Symposium at NAIAS**



Autoline goes live from the floor of the North American International Auto Show Jan. 12 and Jan. 14 at 1 p.m ET (18:00 GMT). Guests include Chrysler's Al Gardner, Ludwig Willisch of BMW, Hyundai's Dave Zuchowski, Jim Lentz of Toyota, Bob Ferguson of Cadillac, Chevrolet's Tim Mahoney and many more.

## **Hyundai Luxury Brand Still Under Study, But Showroom-Within-Showroom to Expand**

With the upcoming second-generation Genesis on its way, Hyundai's new CEO expects a number of dealers that don't also sell the Equus to opt for the automaker's showroom-within-a-showroom kit.

[FULL ARTICLE](#)

## **Gallery: 2014 NAIAS World Debuts (Monday)**

Here are the key new models that made their world debuts during Monday's press preview at the North American International Auto Show in Detroit.

[FULL ARTICLE](#)

## **Chrysler Ups Its Midsize Sedan Game With All-New 200**

The new 200 is a 360-degree holistic design, not a front end and rear end joined together by a disparate middle, says design chief Ralph Gilles. "We want to be about not only beautiful cars, but the art of design."

[FULL ARTICLE](#)

## **Gallery: First Look, '15 Chrysler 200**

The new 200 marks a radical departure in styling, with more of a fastback design and greater attention to detail both inside and out.

## **GM's Mark Reuss Says Big Pickup Recall Getting Fixed Fast**

GM on Friday issued the recall of its '14 Chevrolet Silverado and GMC Sierra pickups, saying an engine fire could occur if exhaust components overheat.

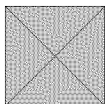
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## **GM Sweeps Car and Truck of Year Awards**

General Motors' Cadillac ATS won North American Car of the Year last year and had three finalists in this year's competition.

[FULL ARTICLE](#)

## **Special Report: 2014 North American International Auto Show**



Complete coverage of this week's 2014 North American International Auto Show in Detroit.

## **Ford to Spread Aluminum Use Beyond F-150**

Ford CEO Alan Mulally says time spent as chief of Boeing's commercial aircraft division convinced him of the durability of aluminum.

[FULL ARTICLE](#)

## **Beetle Dune Designed to Leave the Pavement**

The hardtop model features an extremely low profile and highly pronounced 2 part wheel arches that give the Beetle a rugged, well-planted appearance. VW says the concept is production ready.

[FULL ARTICLE](#)

## **Passat BlueMotion Concept to Test Waters on Fuel Efficiency**

Digital Magazine

The downsizing trend is clear in the U.S., Volkswagen executives say, and the concept car is meant to test how far American buyers are willing to go.

[FULL ARTICLE](#)

## **Toyota Concept Sports Car Gives Pure Design Its Due**

The FT-1 reflects Toyota CEO Akio Toyoda's directive to design teams to take more risks and create products that connect on an emotional level, Kevin Hunter says.

[FULL ARTICLE](#)

## **Honda Unveils More Fuel-Efficient Fit**

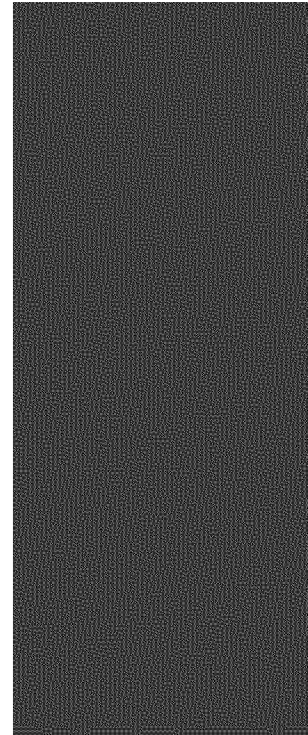
The Japanese automaker says its smallest model in the U.S. should achieve 36 mpg combined, edging out B-car competitors.

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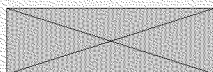
## **Chrysler Gets Serious About Competing in Midsize Sedan Segment**

The automaker sets out to change perceptions with its all-new Chrysler 200.

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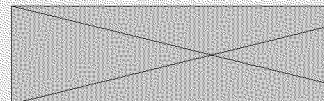
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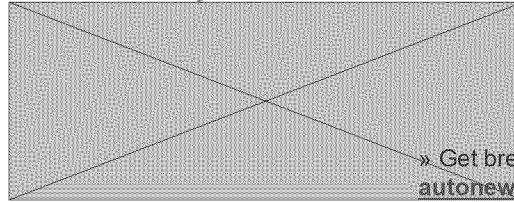


**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 1/13/2014 10:15:03 PM  
**Subject:** DAILY: Ford plans staggered launch of new F-150 | Next Wrangler to shed pounds, add powertrain options | DOT's Foxx raises privacy questions | Reuss: 'I want to get my hands on' Ford's new pickup

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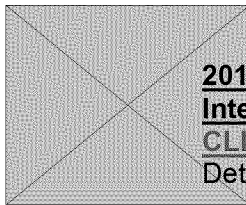
**GMC Canyon offers big-truck looks in smaller package**

January 13, 2014



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**2014 North American International Auto Show**  
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## TOP NEWS

### **2014 DETROIT AUTO SHOW** **Ford plans staggered launch of new F-150 at 2 plants**

12:50 pm U.S. ET | Jan 13

Ford will begin production of the 2015 F-150 in the fourth quarter at the Dearborn Assembly Plant. Production of the existing 2014 F-150 will continue through the year until the first quarter next year at Ford's plant in Kansas City, Mo. ... » [READ](#)

### **Next Wrangler to shed pounds, add powertrain options, CEO says**

2:13 pm U.S. ET | Jan 13

Fiat-Chrysler CEO Sergio Marchionne said the next-generation Jeep Wrangler must be lighter and have more powertrain options to improve fuel economy. ... » [READ](#)

## **GM mulls small diesel for pickups**

1:43 pm U.S. ET | Jan 13

General Motors is considering adding a small-displacement diesel engine to its Chevrolet and GMC 1500 pickups to boost fuel economy. ... » [READ](#)

## **DOT secretary: Connected cars raise 'questions' on privacy**

9:43 am U.S. ET | Jan 13

Transportation Secretary Anthony Foxx told reporters today he has concerns that wireless connectivity in cars could put drivers' privacy at risk -- but the government is not rushing to judgment. ... » [READ](#)

### **2014 DETROIT AUTO SHOW**

## **Sleek, 'gawkiness' and Audi A7: What people think of new Chrysler 200**

11:43 am U.S. ET | Jan 13

A roundup of what analysts, journalists and others are saying about the redesigned 2015 Chrysler 200: ... » [READ](#)

### **ON THE BLOGS**

**MIKE COLIAS**

**GM's Reuss: "I want to get my hands on" Ford's new pickup**  
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**From doom to boom: New Chrysler 200 rescued a plant destined for shutdown**  
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**for advertising's big game**

COLUMNS  
KEITH CRAIN

ARCHI

## After 25 years, product is still king

12:01 am U.S. ET | Jan 13

The lifeblood of the motor industry is product. Anyone who thinks product isn't king should see the thousands of journalists who come to Detroit from all over the world. They come to see the newest models and to talk to the global automotive executives here to introduce their cars and promote their companies. ...

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## YANG JIAN: Beijing should favor

health over tech edge 12:01 am U.S. ET | Jan 13

## VW to bring CrossBlue-based SUV to U.S. in 2016

7:30 pm U.S. ET | Jan 12

## Audi's concept previews TT design, SUV plans

2:56 pm U.S. ET | Jan 12

## Revamped 200 gives Chrysler hope for gaining on mid-sized rivals

UPDATED: 1/13/14 11:12 pm ET

12:01 am U.S. ET | Jan 13

## Marchionne to stay at Chrysler-Fiat 'at least' another 3 years, Elkann says

8:42 am U.S. ET | Jan 13

## Porsche 911 Targa harkens back to 1965 design

11:45 am U.S. ET | Jan 13

## Corvette Stingray and Chevy Silverado win North American car, truck awards

UPDATED: 1/13/14 8:41 am ET - adds Barra comment, history

7:45 am U.S. ET | Jan 13

## Honda pitches a new Fit in subcompact market

3:00 pm U.S. ET | Jan 13

## Nissan sedan concept teases racier



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## **Maxima**

4:00 pm U.S. ET | Jan 13

## **Toyota's FT-1 concept hints at future sports car**

UPDATED: 1/13/14 10:32 am ET

12:01 am U.S. ET | Jan 13

## **FT-1: Behind Toyota's new sports car concept**

12:01 am U.S. ET | Jan 13

## **Lentz: Toyota Motor Sales' 2014 U.S. sales to rise by 100,000**

7:39 pm U.S. ET | Jan 12

## **GMC Canyon offers big-truck looks in smaller package**

UPDATED: 1/12/14 8:57 am ET - adds details on powertrains

12:01 am U.S. ET | Jan 12

## **New F-150 engine plays key role in weight reduction**

11:17 am U.S. ET | Jan 13

## **Ford's bet on aluminum F-150 reflects Mulally's imprint**

UPDATED: 1/13/14 8:39 am ET -- F-150 unveiled

12:01 am U.S. ET | Jan 13

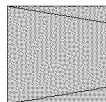
## **VW eyes bigger Tiguan to meet U.S. sales goals**

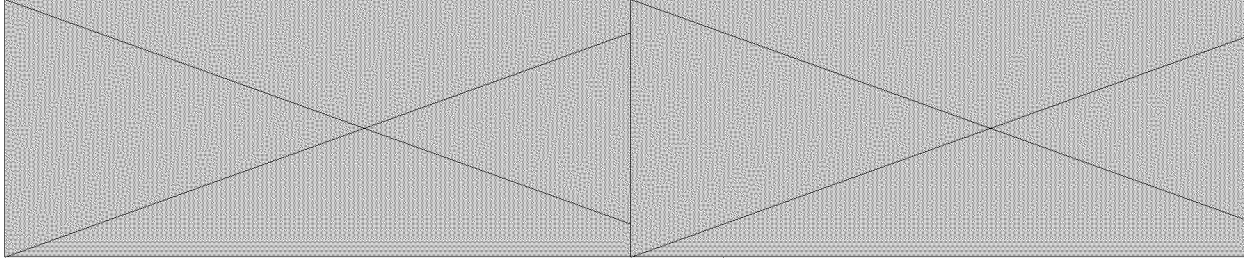
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**To:** Sohacki, Lynn[sohacki.lynn@epa.gov]  
**From:** Glas, Tobias  
**Sent:** Tue 1/14/2014 4:54:03 PM  
**Subject:** RE: Question about VW CC Class S146, test group

**Ex. 7**

Happy New Year Lynn !

I checked the different software levels and there is no emission related campaign for any of them.

So the car should be fine for testing.

Please keep me updated on further steps.

Thanks

**Tobias Glas**

In-Use Emission Compliance Specialist

Engineering & Environmental Office

Volkswagen Group of America, Inc.

3800 Hamlin Road

Auburn Hills, MI 48326

United States of America

Phone: (248) 754-4211

Cell: (248) 494-1537

Fax: (248) 754-4207

E-Mail: [Tobias.Glas@vw.com](mailto:Tobias.Glas@vw.com)

**From:** Sohacki, Lynn [mailto:sohacki.lynn@epa.gov]  
**Sent:** Thursday, December 12, 2013 3:58 PM  
**To:** Glas, Tobias  
**Subject:** Question about VW CC Class S146, test group

**Ex. 7**

Hi, Tobias.

We are planning to start recruiting vehicles for this class even though it has been a long time since I sent the notification letter. One potential vehicle has had a computer reflash or update. I looked through the defect reports to see if there were any recalls or service actions on this test group for emissions purposes but couldn't locate anything. Have there been any emissions-related service campaigns for this test group?

Thanks in advance for your response.

**Lynn Sohacki**

Compliance Division

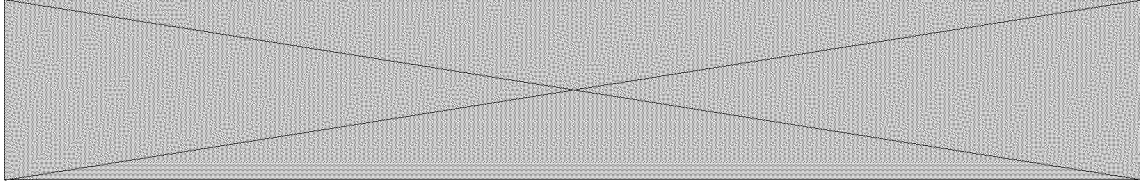
Environmental Protection Agency

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**From:** Green Car Reports  
**Sent:** Tue 1/14/2014 5:02:59 PM  
**Subject:** Green Car Report Daily Headlines

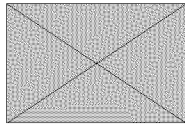
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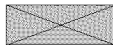
## Audi R8 e-Tron Electric Supercar Nearly Ready For Production

Jan 14, 2014 02:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)

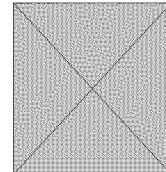
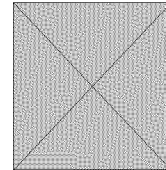


Last summer, Green Car Reports got the chance to drive a rather special model from Audi's portfolio--one of the handful of R8 e-tron electric supercars Audi had produced to demonstrate its electric car abilities. While spectacular to drive, it was hard not to feel a bit hollow, since Audi had just confirmed it wasn't going to put the sleek red...

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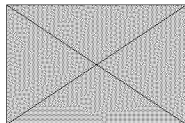


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## VL Automotive Resurrects Fisker Sunset With Destino Red Concept

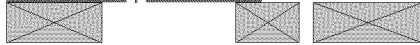
Jan 14, 2014 02:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



While Fisker and its administrators dig through the paperwork and bids relating to its bankruptcy, one company is hard at work turning its products into something else entirely. That company is VL Automotive, co-founded by ex-GM man Bob Lutz and responsible for giving Fisker Karmas an alternative lease of life. Now VL

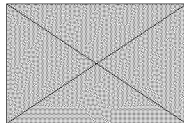
has turned its attentions to...

[comments](#) | [read more](#)



## **Daimler Boss Says Smart Car Is "More Relevant" Than Ever**

Jan 14, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



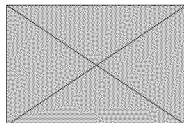
Cars described as "ahead of their time" are usually regarded fondly, but often commercially unsuccessful--the resulting vehicles often too unusual for many consumers. Daimler's Smart brand and the Fortwo minicar fits that bill and could well be described as ahead of its time, but company boss Dieter Zetsche believes the brand's time may finally...

[comments](#) | [read more](#)



## **Value Of Bankrupt Fisker Soars From \$25 Million To \$55 Million With New Bid**

Jan 14, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



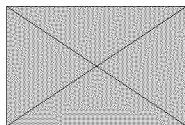
Hybrid Technology Holdings, which thought it had its bid for bankrupt Fisker Automotive all sewed up, isn't letting go easily. The investor group led by Hong Kong tycoon Richard Li had submitted a bid for the remains of the company, which preferred that bid over any others. But a decision by U.S. Bankruptcy Court Kevin Gross has now put the...

[comments](#) | [read more](#)



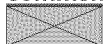
## **2015 Honda Fit: Full Details From 2014 Detroit Auto Show**

Jan 13, 2014 07:50 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



The all-new 2015 Honda Fit was unveiled this afternoon at the Detroit Auto Show--one of very few cars that could conceivably be deemed "green" at an event dominated by the huge new 2015 Ford F-150 full-size pickup truck. The new Fit is a complete redesign of the five-door subcompact that won raves for its interior space and versatility in its...

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**From:** Kaul, Meetu  
**Required Attendees:** Miller, Anthony; Wick, Anne  
**Location:** We'll call Tony from Anne's office  
**Importance:** Normal  
**Subject:** H&S Penalty Approach (defeat devices generally)  
**Start Date/Time:** Wed 1/15/2014 4:00:00 PM  
**End Date/Time:** Wed 1/15/2014 5:00:00 PM

When: Wednesday, January 15, 2014 11:00 AM-12:00 PM (GMT-05:00) Eastern Time (US & Canada).

Where: We'll call Tony from Anne's office

Note: The GMT offset above does not reflect daylight saving time adjustments.

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

**Ex. 5, 7**

**From:** Kaul, Meetu  
**Required Attendees:** Miller, Anthony; Wick, Anne  
**Location:** We'll call Tony from Anne's office  
**Importance:** Normal  
**Subject:** H&S Penalty Approach (defeat devices generally)  
**Start Date/Time:** Wed 1/15/2014 7:00:00 PM  
**End Date/Time:** Wed 1/15/2014 8:00:00 PM

When: Wednesday, January 15, 2014 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).

Where: We'll call Tony from Anne's office

Note: The GMT offset above does not reflect daylight saving time adjustments.

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

**Ex. 5, 7**

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Ball, Joel[ball.joel@epa.gov]; Dalton, Joel[Dalton.Joel@epa.gov]; Wright, DavidA[Wright.DavidA@epa.gov]; Ott, William[ott.william@epa.gov]; Pidgeon, Bill[pidgeon.bill@epa.gov]; Good, David[good.david@epa.gov]  
**From:** Wehrly, Linc  
**Sent:** Tue 1/14/2014 8:20:10 PM  
**Subject:** VW Fuel Cell Vehicle

Jim,

I just spoke with **Ex. 7** of VW about their new FCV. **Ex. 7** will also be calling you to give you more details, but the gist is that this will be their first FCV and they want to know what they need to do for certification or more specifically how to test the vehicle for FE and range. The vehicle will also use a battery that will extend the range approximately 20 miles. I don't believe any of the other OEM FCVs use a battery, so the question becomes how would we incorporate this into the mpge and range measurements and calculations.

Does anyone know the last FCV we confirmatory tested? Is the lab still set up to test FCVs? Do we have any desire to test this vehicle – it sounds like it will be another low volume, possibly two-year lease type program. How much effort do we want/need to put into this?

Thanks,

Linc

Linc Wehrly

Director, Light-Duty Vehicle Center

Compliance Division

Office of Transportation and Air Quality

United States Environmental Protection Agency

(734) 214-4286

wehrly.linc@epa.gov





**To:** richard.thomas@vw.com[richard.thomas@vw.com]  
**From:** Good, David  
**Sent:** Tue 1/14/2014 8:53:15 PM  
**Subject:** 2015 FE Guide - Errors in Verify as of 1/14/2014  
VGA2015 FEGuide-all rel dates-no-sales-1-14-2014.xlsx

Richard,

Re: 2015 FE Guide - Errors in Verify as of 1/14/2014

Here you go.

Dave

EPA comr	VERIFY cc	Model Yr (Mfr Name Division (t	Carline	Verify Mfr Index (Mo	Eng Displ # Cyl
Annual fue	Y	2015 Volkswagen Audi AG	A3 Cabrio	VGA	6 1.8 4
		2015 Volkswagen Audi AG	A3 Cabrio	VGA	5 2.0 4
		2015 Volkswagen Audi AG	A3 quattro	VGA	4 2.0 4
		2015 Volkswagen Volkswagen	GTI	VGA	1 2.0 4

Trans as I	City FE (G	Hwy FE (C	Comb FE Low'd City	Low'd HW	Low'd Cor	City Unad	Hwy Unad	Comb Unad
Auto(AM-S	24	35	28			30.5000	47.0000	36.2224
Auto(AM-S	23	32	26			29.0000	44.2000	34.3094
Auto(AM-S	24	33	27			30.0000	44.6000	35.1828
Auto(AM-S	25	33	28			30.7000	45.3000	35.9078

City	City Hwy	City Hwy	Unrd Comb Unr	Guzzler?	Air Aspir IA	Air Aspira	Trans	Trans Des	Trans, Otr	# Gears
24.3444	34.5845	28.0867		TC	Turbochar	AMS	Automated			6
23.3120	31.5429	26.4136		TC	Turbochar	AMS	Automated			6
24.0818	32.6198	27.2970		TC	Turbochar	AMS	Automated			6
24.6434	32.6158	27.6891		TC	Turbochar	AMS	Automated			6

Lockup T	Trans Cr	Drive Sys	Drive Des	Primary B	Max Ethar	Max Biodi	Range1 - IFuel Usag	Fuel Usag
Automated Manual with paddles)		2-Wheel DF	VGA02.		15		GP	Gasoline (I
Automated Manual with paddles)		All Wheel IF	VGA02.(		15		GP	Gasoline (F
Automated Manual with paddles)		All Wheel IF	VGA02.(		15		GP	Gasoline (F
Automated Manual with paddles)		2-Wheel DF	VGA02.(		15		GP	Gasoline (F

Model	Year	MPG (City/Hwy)	Gas Guzzl	Gas Guzzl	2Dr Pass	2Dr Lugg	4Dr Pass	4Dr Lugg	Htchbk Pa	Htchbk Lu
MPG	Unleaded (Recommended)		Not exemp		86	12				
MPG	Unleaded (Recommended)		Not exemp		86	10				
MPG	Unleaded (Recommended)		Not exemp		86	10				
MPG	Unleaded (Recommended)		Not exempt						93	14

Annual Fuel	EPA Calculated	Comment	City2 FE (Hwy2 Fuel Comb2 Fuel	Low'd City	Low'd Hwy	Low'd Cor	City2 Unadjusted
1900	2050						
2200	2200						
2100	2100						
2050	2050	SMOG corrected to 9 as this is a nationwide Tier 2 BIN 2 and Calif PZEV					



Highway Fuel Use (Gallons) / Alternative Fuel										
Highway	Comb2	Unit	Highway	Comb2	Unit	Range	Fuel2	Us	Fuel2	Unit
1			1							
2			2							
3			3							
4			4							
5			5							
6			6							
7			7							
8			8							
9			9							
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59			59							



Car/Truck	Calc Appr Sales	Release DEPA FE Label Data	Unique La	Label Rec	Relabel	Relabel D
car	Vehicle Specific 5-cycle	1/15/2014	15296	[REDACTED]	N	N
car	Vehicle Specific 5-cycle	1/15/2014	15295	[REDACTED]	N	N
car	Vehicle Specific 5-cycle	1/15/2014	15294	[REDACTED]	N	N
car	Vehicle Specific 5-cycle	4/1/2014	15293	[REDACTED]	N	N

Suppress	Police/Em	Comment	Cyl Deact	Cyl Deact	Var Valve	Var Valve	Var Valve	Var Valve	Energy St
N	N	1.8L Engin	N	Y	CONTINU	N			
N	N	2.0L Engin	N	Y	CONTINUCY		Audi Valve		
N	N	2.0L Engin	N	Y	CONTINUCY		Audi Valve		
N	N	2.0L Engin	N	Y	CONTINUCY		Audi Valve		

Device Des	Battery	Battery Ty	Battery Ty	Total Volt	Batt Ener	Batt Spec	Batt Char	Comment	# Capacit
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Regen BrzRegen BrzRegen BrzDriver CntFuel Cell [Usable H2Fuel Cell (HEV-EV C# Drive M<Motor Ger

Motor Ger	Rated Mot	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Cell V	Off Board	Camless V	Oil Viscosi
				GDI	Spark Ignit			N	5W40 VW
				GDI	Spark Ignit			N	5W40 VW
				GDI	Spark Ignit			N	5W40 VW
				GDI	Spark Ignit			N	5W40 VW

Stop/Start	Stop/Start	Trans in FE	Trans as I	Model Typ	Charge De	Charge De	Charge Su	Charge Su	EPA Calcul
N	No	Auto(AM-S	Auto(AM-S						
N	No	Auto(AM-S	Auto(AM-S						
N	No	Auto(AM-S	Auto(AM-S						
N	No	Auto(AM-S	Auto(AM-S						



Model Year	EPA Calculated Gas	GHG Rating	#1 Smog R	#1 Mfr Sm	#1 EPA Sm	SmartWay
36.2		7	7 FVGAV02.	9		
34.3		6	6 FVGAV02.0	9		
35.2		7	7 FVGAV02.0	9		
35.9		7	7 FVGAV02.0	9		

Signal 10 Pull #56 Test #6 for Test Group A) #3 Smog R #3 Mfr Sm #3 EPA Sm SmartWay #4 Smog R #4 Mfr Sm





City	State	Model Year	Distance (miles)	Comb Vol Higher	Final Label	EPA_FUEL	EPA_GHG	EPA_AMT
N			3.6		3.6			
N			3.8		3.8			
N			3.7		3.7			
N			3.6		3.6			



2017-FFP\_007438  
EPA\_UNR EPA\_UNR EPA\_UNR EPA\_ADJ EPA\_PHEV Label Subr GHG 1-10 rating on Ethanol (EPA Deter

Mr Richard E Thomas Jr

Mr Richard E Thomas Jr

Mr Richard E Thomas Jr

Mr Richard E Thomas Jr

mined)









**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Tue 1/14/2014 9:07:56 PM  
**Subject:** RE: 2015 Audi labels

Richard,

I'll run another query tomorrow (to send to DOE for posting on the web). I'll send you any errors at that time.

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Tuesday, January 14, 2014 12:15 PM  
**To:** Good, David  
**Subject:** 2015 Audi labels

Hi Dave;

Those two 2015 Audi indexes (002 and 003), I spoke about have now been successfully entered into Verify. If you could take a look at indexes 002 through 006 that would be great.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207

[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** French, Roberts[french.roberts@epa.gov]; Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]  
**From:** Good, David  
**Sent:** Tue 1/14/2014 10:22:49 PM  
**Subject:** FW: VW Fuel Cell Vehicle (dual fuel Electricity & Hydrogen fuel cell vehicle)

FYI

Dave

**From:** Wehrly, Linc  
**Sent:** Tuesday, January 14, 2014 3:20 PM  
**To:** Snyder, Jim  
**Cc:** Ball, Joel; Dalton, Joel; Wright, DavidA; Ott, William; Pidgeon, Bill; Good, David  
**Subject:** VW Fuel Cell Vehicle

Jim,

I just spoke with **Ex. 7** of VW about their new FCV. **Ex. 7** will also be calling you to give you more details, but the gist is that this will be their first FCV and they want to know what they need to do for certification or more specifically how to test the vehicle for FE and range. The vehicle will also use a battery that will extend the range approximately 20 miles. I don't believe any of the other OEM FCVs use a battery, so the question becomes how would we incorporate this into the mpge and range measurements and calculations.

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Thanks,

Linc

Linc Wehrly

Director, Light-Duty Vehicle Center

Compliance Division

Office of Transportation and Air Quality

United States Environmental Protection Agency

(734) 214-4286

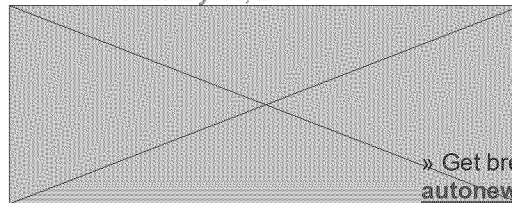
[wehrly.linc@epa.gov](mailto:wehrly.linc@epa.gov)

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 1/14/2014 10:34:31 PM  
**Subject:** DAILY: Mulally says auto industry needs privacy boundaries set by law | AutoNation's Jackson warns of excessive inventory levels | How all the wrong things paid off for Tesla

Today's most read story

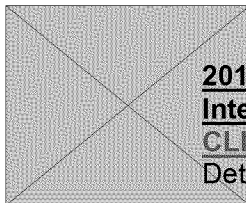
**First Shift: Ford F-150 drops 700 lbs.**

January 14, 2014



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International Auto Show**  
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Detroit auto show.

## TOP NEWS

### **2014 DETROIT AUTO SHOW** **Mulally: Auto industry needs privacy boundaries set by law**

1:49 pm U.S. ET | Jan 14

The automotive industry needs legislation to protect drivers' privacy as more cars utilize data for location tracking and other services, Ford CEO Alan Mulally said Tuesday. Ford is "supportive and participating" in talks with regulators who are considering such laws, Mulally said today at the Detroit auto show. ... » [READ](#)

### **AutoNation's Jackson warns of excessive inventory levels in 2014**

2:18 pm U.S. ET | Jan 14

AutoNation's CEO Mike Jackson warns manufacturers to slow production in 2014. Jackson said the auto industry is unlikely to grow in 2014 at the same rate it has been growing in the past few years. ... » [READ](#)



## **UAW expects to be in VW's Tennessee plant by June, report says**

4:13 am U.S. ET | Jan 14

UAW President Bob King is convinced the union will be represented in Volkswagen's U.S. plant in Chattanooga by June, he told a German newspaper. ... » [READ](#)

### **2014 DETROIT AUTO SHOW**

## **Tesla's global sales top 22,000 in 2013, stock rises 16%**

UPDATED: 1/14/14 4:19 pm ET - adds stock close  
1:27 pm U.S. ET | Jan 14

Tesla said it delivered about 22,300 of its Model S electric cars worldwide in 2013. The company also said "nearly all" of the Model S cars covered by a recall announced Monday already have received a wireless software update to prevent chargers from overheating. Tesla shares rose 16 percent today. ... » [READ](#)

### **2014 DETROIT AUTO SHOW**

## **Cadillac ATS coupe sets sights on rivals BMW, Mercedes**

12:01 am U.S. ET | Jan 14

Cadillac will try to build on the success of its ATS compact sedan with a two-door coupe as the luxury brand vies to keep pace with a proliferation of models and variants offered by German rivals. ... » [READ](#)

### **2014 DETROIT AUTO SHOW**

## **Cadillac chief: ATS convertible, wagon on the table**

UPDATED: 1/14/14 3:40 pm ET  
9:37 am U.S. ET | Jan 14

The ATS coupe that Cadillac unveiled here today is the first variant model to spin off from the award-winning compact sedan -- but it won't be the last, Cadillac global chief Bob Ferguson vows. ... » [READ](#)

### **ON THE BLOGS**

**NICK BUNKLEY**

## **All the wrong things pay off for Tesla**

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**JAMIE LaREAU**

## **AutoNation's Mike Jackson picks his show winners**

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**RICHARD JOHNSON**

## **Porsche nixes entry-level roadster, small crossover**

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Redesigned Chrysler 200 is likely foundation for Journey replacement  
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At Subaru, a high-performance STI in 2 flavors  
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RYAN BEENE

Hyundai honors Genesis with a winged badge  
» READ

LINDSAY CHAPPELL

Eau Rouge points to sportier Infiniti portfolio  
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DIANA T. KURLKO

At BMW, a careful eye on the EV market  
» READ

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- » Overproduction, hefty spiffs sink residuals of Cadillac ATS
- » Ghosts, sleek, gawkiness and the Audi A7: What people think of new Chrysler 200
- » Ford's bet on aluminum F-

**150 reflects Mulally's  
imprint**  
**» Toyota's FT-1 concept  
hints at future sports car**

**Viral video rankings for week of  
1/14/2014**

**Win a Rogue, have a  
heart attack**

12:01 am U.S. ET | Jan 14

Nissan is attempting to pump some excitement in to the 2014 Nissan Rogue.

... » [Watch the videos](#)

**Autobytel acquires lead  
wholesaler AutoUSA from  
AutoNation**

12:01 am U.S. ET | Jan 14

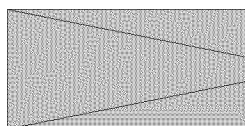
**Acura's TLX to do double duty**

UPDATED: 1/14/14 4:41 pm ET

11:05 am U.S. ET | Jan 14

**Lexus puts performance in RC  
F coupe**

UPDATED: 1/14/14 11:41 am ET



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» [May 14 - Marketing](#)

10:21 am U.S. ET | Jan 14

**Volvos made in China to come to U.S. 'fairly quickly,' says CEO**

4:05 pm U.S. ET | Jan 14

**Electric cars pose different risks, not more, U.S. regulator says**

2:04 pm U.S. ET | Jan 14

**GM's 2013 global sales rise 4.5% for narrow lead over VW**

11:55 am U.S. ET | Jan 14

**Infiniti working with Daimler on platform for four models**

3:33 pm U.S. ET | Jan 14

**German automakers to focus on boosting local production in U.S., PwC says**

10:12 am U.S. ET | Jan 14

**Hyundai to keep 2015 Genesis sticker below \$40K**

4:30 pm U.S. ET | Jan 13

**Michelin says new tire gets better with age**

9:18 am U.S. ET | Jan 14

**JCI preps lightweight lead-acid battery**

4:04 pm U.S. ET | Jan 14

**Visteon to buy electronics unit of Johnson Controls for \$265M**

10:45 am U.S. ET | Jan 14

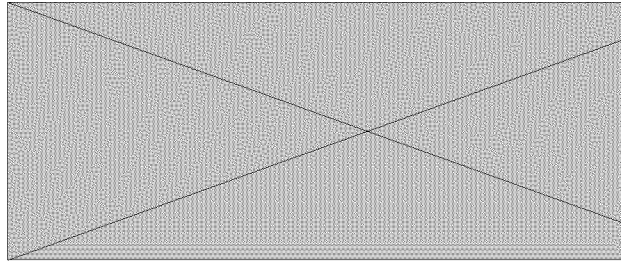
**Denso plans to expand U.S. headquarters, operations**

UPDATED: 1/14/14 2:24 pm ET - adds correction

12:20 pm U.S. ET | Jan 14



Seminar - Los  
Angeles  
» June 3, 2014 -  
Rising Stars  
» June 4, 2014 - ANE  
Congress



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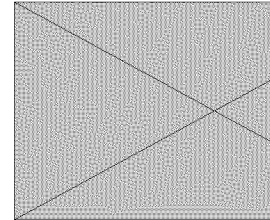
..

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** WardsAuto OEM Edition  
**Sent:** Wed 1/15/2014 9:00:31 AM  
**Subject:** Mark Reuss Not Talking GM Architecture Strategy Any Longer

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# WardsAuto OEM Edition

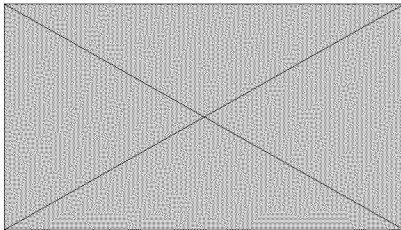
January 15, 2014



## **BMW 'M' Showcase for Power, Lightweight Materials**

**Digital Magazine**

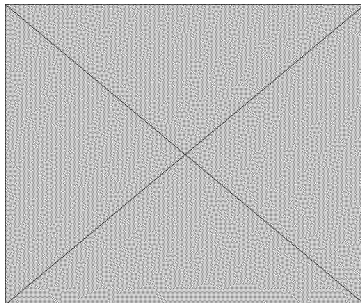
[Read the Current Issue](#)



Going on sale this summer, the all-new '15 M3 and M4 reflect BMW's eager embrace of carbon fiber as a lightweight material that can be decorative as well as structural.

**FULL ARTICLE**

Advertisement



### **2014 COOL PARTS CALENDAR**

Designed by designers and engineered for engineers, our annual Cool Parts Calendar features the visions of product developers across the nation and around the world. It features monthly contests, industry tradeshow dates, and (of course) those elusive days of the week. [Request your calendar today.](#)

## **Gallery: '15 BMW M3 and M4 World Premiere**



The coupe and sedan, displayed in their world premiere at this year's North American International Auto Show, go on sale simultaneously early this summer with a more powerful engine, aggressively bolstered seats, bold styling and an emphasis on lightweight materials, such as carbon fiber.

## **Panasonic, Abbey Road Studios Come Together**

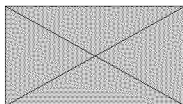
Panasonic's automotive division previously has partnered with Fender and recording veteran Elliot Scheiner for audio systems and now teams up with the legendary London studio where the Beatles recorded hit after hit during the 1960s.

[FULL ARTICLE](#)

## **20 Years of Favorite Engines**

The Ward's 10 Best Engines competition is in its 20th year. We mark the occasion by recalling those that are hard to forget.

## **Autoline Daily**



Price War Looming?; Cadillac ATS Coupe Revealed;  
Nissan Unveils Two Concepts

## **Audi at CES: 'The Future Is Almost Here'**

The German automaker uses the Consumer Electronics Show stage to discuss laser headlamps, self-driving cars, virtual cockpits and the 2015 launch of the A3 e-tron sportback plug-in hybrid.

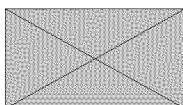
[FULL ARTICLE](#)

## **Makers Build on Robust Q1 Plan**

While Ford continues to review its first-quarter plans, other auto makers have added a net 43,800 units to the already strong Q1 output slate, bringing the total to 4,281,200, a 4.9% gain over of like-2013.

[FULL ARTICLE](#)

## **VideoWire**



Best, Worst Cars; China Leads GM Sales Rise; Mustang in

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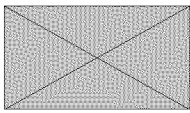
Need for Speed

## **Mark Reuss Not Talking GM Architecture Strategy Any Longer**

"We are not in a desperate situation, where we have to convince people we're doing the right things," General Motors' new global product chief says.

[FULL ARTICLE](#)

## **Test Drive: New '14 Toyota Highlander Pushes Luxury Factor**



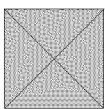
The '14 Highlander is offered with three powertrains: a 3.5L V-6 making 270 hp, 2.7L 4-cyl. producing 185 hp and a Hybrid Synergy Drive system.

[FULL ARTICLE](#)

## **Gallery: '14 Toyota Highlander**

New '14 Toyota Highlander enters a segment that has seen most entries go up market. To better compete, the new Highlander features new exterior and interior styling that pushes the luxury envelope.

## **Special Report: 2014 North American International Auto Show**



Complete coverage of this week's 2014 North American International Auto Show in Detroit.

## **Chrysler Ups Its Midsize Sedan Game With All-New 200**

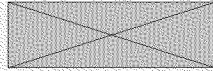
The new 200 is a 360-degree holistic design, not a front end and rear end joined together by a disparate middle, says design chief Ralph Gilles. "We want to be about not only beautiful cars, but the art of design."

[FULL ARTICLE](#)

## **Gallery: First Look, '15 Chrysler 200**

The new 200 marks a radical departure in styling, with more of a fastback design and greater attention to detail both inside and out.

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**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Wed 1/15/2014 11:14:50 AM  
**Subject:** FW: 2015 Audi labels

Hi Dave,

I corrected index 006 now.

Thanks,

Richard

**From:** Thomas, Richard (EEO)  
**Sent:** Tuesday, January 14, 2014 4:17 PM  
**To:** 'Good, David'  
**Subject:** RE: 2015 Audi labels

Okay Dave thanks. I know what is wrong with the 1.8L label you checked earlier and will make the correction tomorrow. I selected the wrong fuel.

**From:** Good, David [<mailto:good.david@epa.gov>]  
**Sent:** Tuesday, January 14, 2014 4:08 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: 2015 Audi labels

Richard,

I'll run another query tomorrow (to send to DOE for posting on the web). I'll send you any errors at that time.

Dave

**From:** Thomas, Richard (EEO) [<mailto:Richard.Thomas@vw.com>]  
**Sent:** Tuesday, January 14, 2014 12:15 PM  
**To:** Good, David  
**Subject:** 2015 Audi labels

Hi Dave;

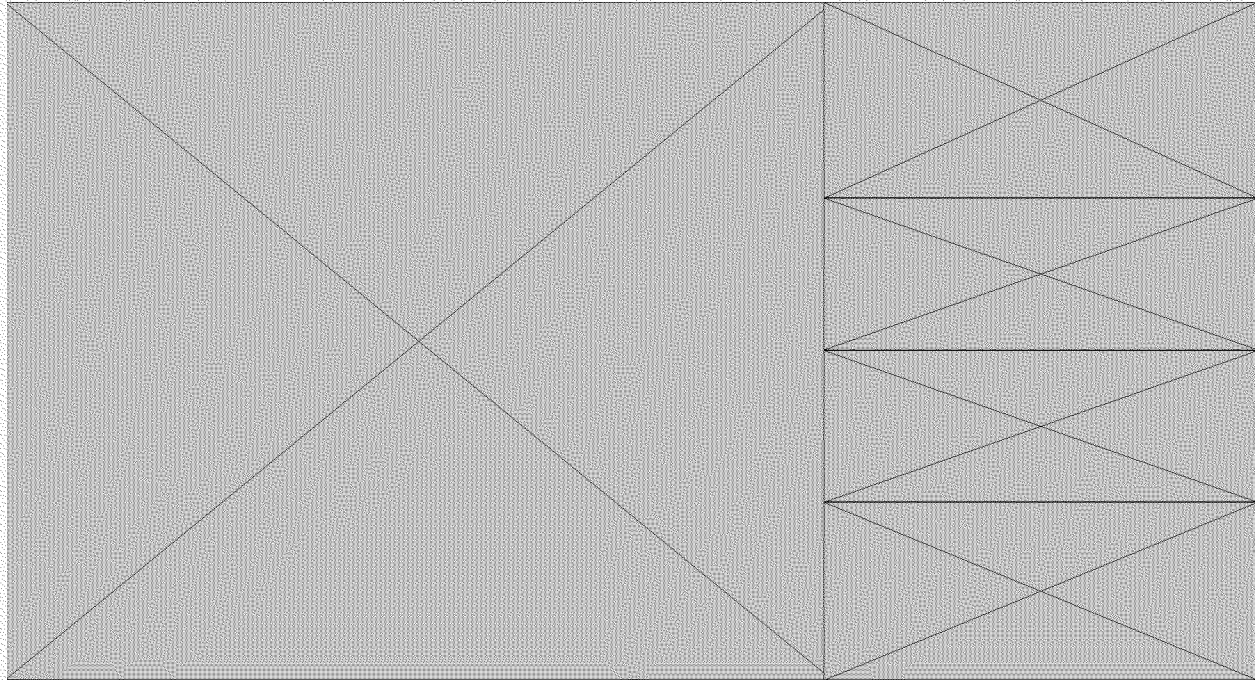
Those two 2015 Audi indexes (002 and 003), I spoke about have now been successfully entered into Verify. If you could take a look at indexes 002 through 006 that would be great.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Brooks, Phillip[Brooks.Phillip@epa.gov]  
**From:** Charlotte Linfoot  
**Sent:** Wed 1/15/2014 11:59:37 AM  
**Subject:** WBM 2014 agenda updated ahead of Early Booking deadline



Dear Phillip,

### **Early Booking rates expire in 7 days**

With early booking rates expiring in just one week, we thought it best to provide you with the most up to date information on the event.

With new speakers joining an already 160+ strong line-up, the expansion of our Plant Design Process & Optimisation stream and the addition of the Biofuels Trade & Market Dynamics click here to see the latest agenda for the 9th annual World Bio Markets event.

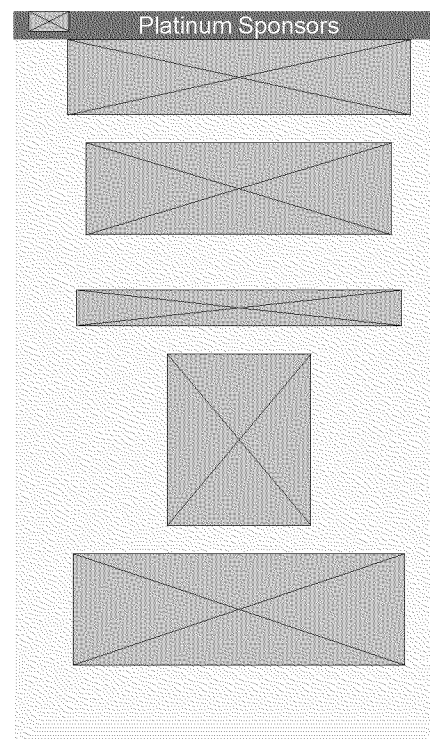
### **New speakers include:**

#### **Bio Jet Fuel:**

- Jonathon Counsell, Head of Environment, British Airways
- Philippe Marchand, Director of Biotechnologies, Renewable Energy Division, TOTAL

#### **Bio-based Chemicals & Products:**

- Aaron Thornton, Global Marketing Manager, Biorenewables, BASF
- Emmanuel Petiot, Chief Executive Officer, Deinove





#### Plant Process Design & Optimisation:

- Frank Malouf, Plant Manager, Louis Dreyfus
- Oded Lerner, Senior Manager, Bio-Products Separation, Tenova Bateman Technologies

#### Bio-based Feedstocks:

- Steven Thomas, Feedstocks Technology Manager, Bioenergy Technologies Office Department of Energy
- Martina Otto, Head of Policy Unit Energy Branch, United Nations Environmental Programme

#### Sustainability & ILUC:

- Ella Lammers, Senior Advisor, NL Agency
- Chris Malins, Clean Fuels Program Lead, ICCT

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We look forward to seeing you in Amsterdam.

Kind regards,

Dr Charlotte Linfoot

World Bio Markets Series Director

T: +44 (0)20 3384 6218

E: [charlotte.linfoot@greenpowerconferences.com](mailto:charlotte.linfoot@greenpowerconferences.com)

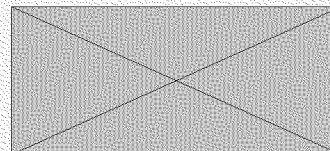
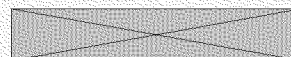
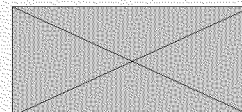
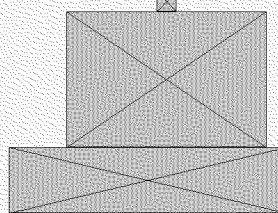
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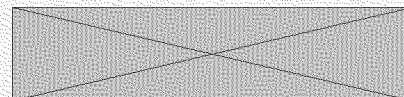
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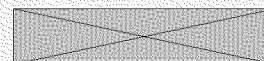
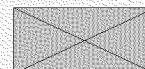
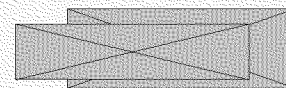
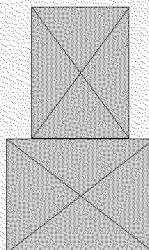
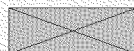
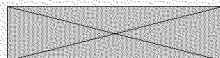
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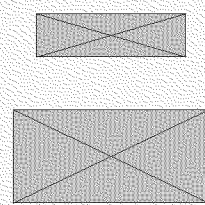
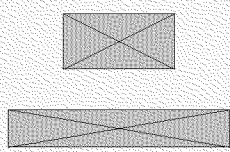
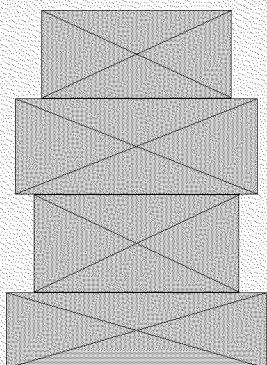


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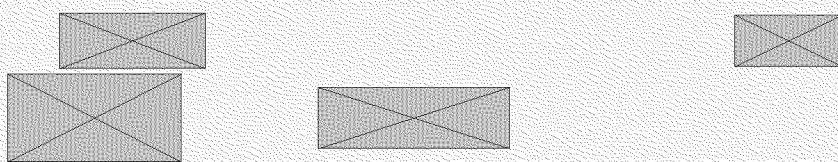




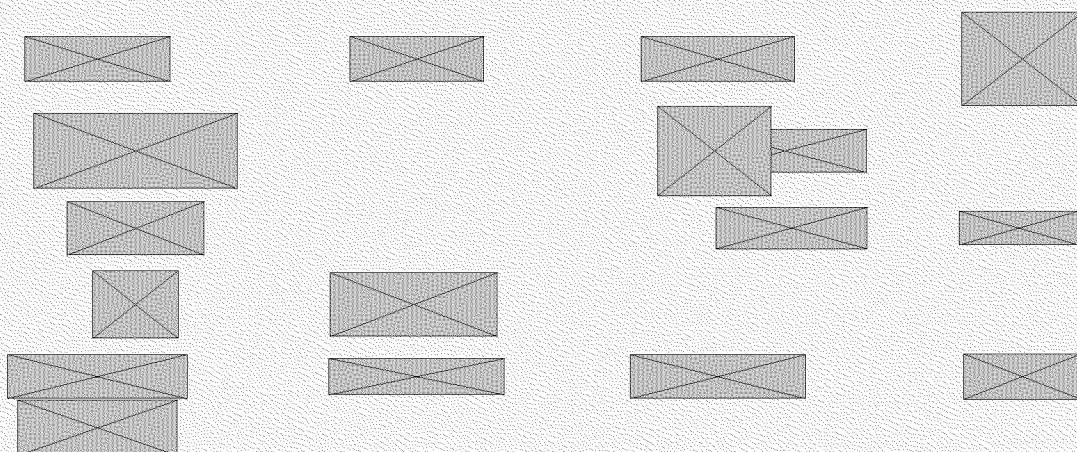
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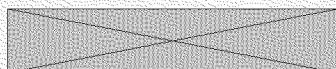


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**To:** French, Roberts[french.roberts@epa.gov]  
**Cc:** **Ex. 7**  
**From:** Good, David[good.david@epa.gov]  
**Sent:** Wed 1/15/2014 1:56:00 PM  
**Subject:** FW: CO2 label values for some models

Hi Rob,

I received the data from Wolfsburg for the Volkswagen Eos index 078 and now see that the US06 value I entered had a typed in error where the second bag should have been 266 and not the 226 I used in the calculator. I have corrected this index in Verify for 2014. If you notice any other discrepancies please let me know.

Best regards,

**Ex. 7**

**From:** **Ex. 7**  
**Sent:** Friday, January 10, 2014 9:22 AM  
**To:** 'French, Roberts'  
**Cc:** 'Good, David'; **Ex. 7**  
**Subject:** RE: CO2 label values for some models

Hello Rob;

I looked into our labels indexes 58 and 59 and found that the calculated 5-cycle CO2 values transposed from my 5-cycle calculator to my Excel worksheet for the base level and model type calculation was not correct. All CO2 values were incorrect. The correct 5-cycle rounded CO2 values for both the Audi S4 and Audi S5 are: city 519, highway 341 and 439 for the combined. I have made this correction to those two indexes in Verify.

Since the values for the fuel economy are entered into a calculator separately from the CO2 and there is obviously no checks by the EPA audit system the values were not flagged by the EPA system and we had no internal system to make that comparison either. I will now add a quick check to make this rough comparison between fuel economy and CO2 on my worksheet for

model type calculations, hopefully to prevent this error from occurring again.

The second case involves the Volkswagen Eos model (index 78) that was carried over from 2010 model year whereby we had to ask the factory to provide the bag CO2 data for the old original tests that were originally sent to us without bag CO2 data when we started labeling these models for 2013 and the new fuel economy label. I am trying to track down the bag information for that configuration because from the values I had at that time, it resulted in the values I submitted into Verify. I suspect the bag CO2 values were not right from Germany. This may take some time and I will be out of the office next week.

If you have any comments or suggestions please contact me today.

Thanks,

**Ex. 7**

VOLKSWAGEN Group of America, Inc.

**Ex. 7**

**From:** French, Roberts [<mailto:french.roberts@epa.gov>]  
**Sent:** Thursday, January 09, 2014 1:27 PM  
**To:** Ex. 7  
**Subject:** CO2 label values for some models

## Ex. 7

A staffer here at EPA is working on listing qualifying vehicles for low-GHG federal fleet purchases, where the qualifying is based on the label CO2 value. She ran a quick check for consistency between CO2 and MPG values, using the simple 8887 grams/gallon figure that we use for such conversions. This process identified a few outliers among a number of companies, and we'd like to try to track down errors (if any) and repair them.

The first case for VW is the Audi S4 and S5 (Model Type Indices 58 and 59). On the second page of the attached document you will see the issues outlined in my comments. We first identified that the Combined value of 403 g/mi seemed inconsistent with the unrounded MPG value of 20.1767 (we would expect something more along the lines of 440 g/mi). Then we noticed that the 5-cycle adjusted City value is actually lower than the unadjusted value (443>441.7). Based on the test data I have access to in Verify, which does not include the bag-by-bag CO2 values, I calculated that the adjusted City value should be more like 521 g/mi. This doesn't jibe with the MPG values at the top of page 3, which show decreasing MPG (as expected). So something is going on there.

The second case is the VW Eos (Model Type Index 78). We think there may be something going on with the 5-cycle Highway calculation, where our transformation using 8887 is about 13% off from the highway value of 257 g/mi in Verify. Using the data available to me I get a Highway adjusted value of about 295 g/mi, whereas you reported in Verify a value of 256.6 g/mi. I couldn't pinpoint anything specific that might have led to this difference, but maybe you can find out.

If you could dig into these a little and let me know what you find it would be very helpful. I know that measurement error, rounding, and fuel qualities can all make CO2 bounce around for a given MPG value (i.e., 25 MPG is rarely exactly 355 g/mi), but we'd like to try to find out how we can have some business rules or thresholds in Verify that snag actual errors if we can.

Best Wishes for a Happy New Year,

Rob

**Roberts W. French, Jr.**

**Environmental Protection Specialist**

**Compliance Division**

National Vehicle and Fuel Emissions Laboratory

2000 Traverwood Drive

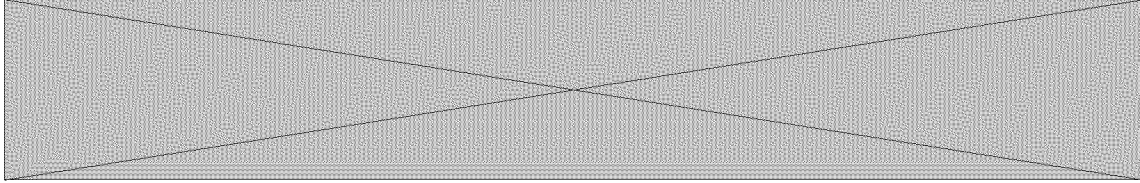
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**Subject:** Green Car Report Daily Headlines

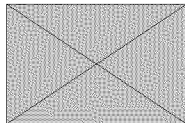
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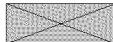
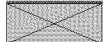
## 6 Million Toyota Hybrids, Detroit Show Wrap-Up, Electric Car Sales In Canada: Today's Car News

Jan 15, 2014 04:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)

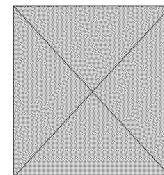
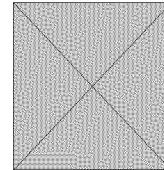


Today on Green Car Reports: we summarize our 2014 Detroit Auto Show coverage by looking at the important car and concept debuts, plug-in electric car sales in Canada rose 50 percent in 2013, and Toyota hybrid sales have now topped 6 million vehicles globally. All this and more on Green Car Reports. Are electric cars a good investment? It depends...

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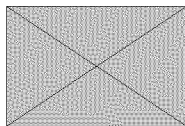


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## How Many Tesla Model S Electric Cars Have Been Built So Far?

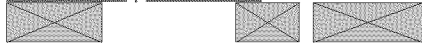
Jan 15, 2014 04:10 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



Car production data may cause some eyes to glaze over, but the numbers are closely followed in the auto industry. Electric-car maker Tesla Motors doesn't report its exact sales, nor its precise production, so a cottage industry has sprung up to track its alleged

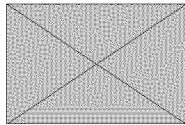
production. MORE: Tesla's Next Electric Car Line:  
Roundup Of What We Know Now Among...

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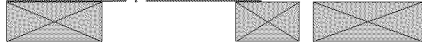
## 2014 Detroit Auto Show: Summing Up The Cars And Concepts

Jan 15, 2014 03:17 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



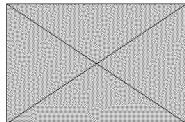
Another year, another Detroit Auto Show. The public won't pass through the doors of Cobo Hall until Friday, but the world's media have largely departed after two days' worth of press previews. It felt like a somewhat flat show, despite rah-rah coverage in the local press, and it really had only three important global debuts. Big pickup, but...

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## Electric Cars: Long-Term Thinking Vs Short-Term Analysis

Jan 15, 2014 02:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



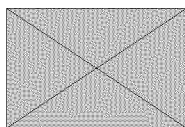
Are electric cars a risk? Not mechanically, or electrically, or if you're intending to drive a long distance, that is. But from the eyes of a financial trader, looking for a safe place to put their money, the answer is often a cautious "yes". But should it be? One investor writing for The Globe And Mail (via Charged EVs) says not--and his...

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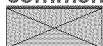
## Toyota Hybrid Sales Top 6 Million Vehicles Globally, And Counting

Jan 15, 2014 02:07 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



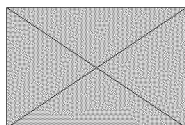
It almost goes without saying, but Toyota loves its hybrids—and, seemingly, so do the world's car buyers. The Japanese automaker said it had sold 6,072,000 hybrids as of December 31, 2013, breaking the 6 million-unit barrier. MORE: Toyota Sells 23 Hybrids Globally; How Many Can You Name? A particularly strong 2013 helped push Toyota over the top...

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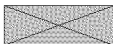
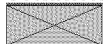
## Plug-In Electric Car Sales In Canada In 2013: Up 50 Percent

Jan 15, 2014 01:56 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Matthew Klippenstein)



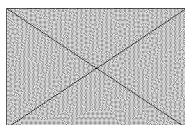
Plug-in electric vehicle sales in Canada rose by half in 2013, with sales poised to top 3,000 units once end-of-year vehicle registration data arrives. This is a year-over-year improvement of more than 50 percent on 2012's total Canadian sales of plug-in cars, helping their share of new-car sales rise from 0.12 to 0.18 percent. That...

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## Audi R8 e-Tron, Smart-Car Relevance, Tesla Recall: Today's Car News

Jan 14, 2014 07:07 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



Today on Green Car Reports: The 2015 Honda Fit and VL Destino Red concept debut at the 2014 Detroit Auto Show, Daimler says its Smart car is "more relevant" than ever, and the Audi R8 e-tron electric supercar is reportedly nearly ready for production. We've got full details on the 2015 Honda Fit from the 2014 Detroit Auto Show. The value of...

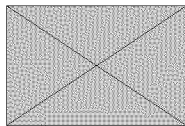
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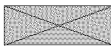
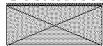
## Tesla Recall: Over-The-Air Updates, NEMA Connectors, And More

Jan 14, 2014 06:40 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



Every carmaker puts its own interpretation on news, especially at Detroit Auto Show. So it's reasonable for Tesla Motors to cast an NHTSA recall yesterday as an example of its ability to respond swiftly and effectively to update its Model S electric car to make the customer experience even better. The NHTSA recall (number 14V006000), issued...

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**To:** [Ex. 6]  
**From:** Ball, Joel  
**Sent:** Wed 1/15/2014 7:54:43 PM  
**Subject:** RE: VW TDI Emmissions Warranty

Hello [Ex. 6]

Thank you for your inquiry regarding the federally required emissions warranty. The Clean Air Act requires manufacturers of light duty vehicles to warranty all emissions related components for 2 years or 24,000 miles and **only** the specified major emission control components for 8 years or 80,000 miles. The specified major emission control components only include the catalytic converters, the electronic emissions control unit or computer (ECU), and the onboard emissions diagnostic (OBD) device or computer. The only parts of the DEF system that are covered for 8 year or 80,000 miles are the actual catalytic converter and the ECU. The following web page provides more information regarding the federal emissions warranty requirements: [www.epa.gov/obd/pubs/420f09048.pdf](http://www.epa.gov/obd/pubs/420f09048.pdf)

I hope this information is helpful.

Joel Ball  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4238  
[ball.joel@epa.gov](mailto:ball.joel@epa.gov)

**From:** [Ex. 6]  
**Sent:** Tuesday, January 14, 2014 9:50 AM  
**To:** Ball, Joel  
**Subject:** VW TDI Emmissions Warranty

Joel

I have a 2011 VW Touareg TDI (Diesel) with an addblue (DEF) system. My question is whether the DEF system components are covered under the 8/80k Federally mandated emissions warranty when these components fail like the NOX sensors, pumps, heaters, etc.

Thanks for the information.

**Ex. 6**

**To:** richard.thomas@vw.com[richard.thomas@vw.com]  
**From:** Good, David  
**Sent:** Wed 1/15/2014 8:32:15 PM  
**Subject:** 2015 FE Guide as of 1/15/2014 attached  
VGA2015 FEGuide-all rel dates-no-sales-1-15-2014.xlsx

Richard,

Our macro didn't pick up any errors.

Dave

EPA comr	VERIFY cc	Model Yr (Mfr Name	Division (I	Carline	Verify Mfr Index (Mo	Eng Displ #	Cyl
		2015 Volkswage	Audi AG	A3 Cabriol	VGA	6	1.8
		2015 Volkswage	Audi AG	A3 Cabriol	VGA	5	2.0
		2015 Volkswage	Audi AG	A3 quattro	VGA	4	2.0
		2015 Volkswage	Audi AG	TT Coupe c	VGA	2	2.0
		2015 Volkswage	Audi AG	TT Roadste	VGA	3	2.0
		2015 Volkswage	Volkswage	GTI	VGA	1	2.0

Trans as I	City FE (G	Hwy FE (C	Comb FE	Low'd City	Low'd HW	Low'd Cor	City Unad	Hwy Unad	Comb Unad
Auto(AM-S	24	35	28				30.5000	47.0000	36.2224
Auto(AM-S	23	32	26				29.0000	44.2000	34.3094
Auto(AM-S	24	33	27				30.0000	44.6000	35.1828
Auto(AM-S	22	31	26				28.3669	42.1911	33.2728
Auto(AM-S	22	31	26				28.3669	42.1911	33.2728
Auto(AM-S	25	33	28				30.7000	45.3000	35.9078

City	Highway	City	Highway	Unrd Comb Unr	Guzzler?	Air Aspir	I Air Aspir	Trans	Trans Des	Trans, Otr	# Gears
24.3444	34.5845	28.0867				TC	Turbochar	AMS	Automate		6
23.3120	31.5429	26.4136				TC	Turbochar	AMS	Automate		6
24.0818	32.6198	27.2970				TC	Turbochar	AMS	Automate		6
22.3665	31.1759	25.6242				TC	Turbochar	AMS	Automate		6
22.3665	31.1759	25.6242				TC	Turbochar	AMS	Automate		6
24.6434	32.6158	27.6891				TC	Turbochar	AMS	Automate		6

Lockup T	Trans Cre	Drive Sys	Drive Des	Primary B	Max Ethar	Max Biodi	Range1 - IFuel Usag	Fuel Usag
Automated Manual with paddles			2-Wheel DFVGAV02.0	15			G	Gasoline (F
Automated Manual with paddles			All Wheel IFVGAV02.0	15			GP	Gasoline (F
Automated Manual with paddles			All Wheel IFVGAV02.0	15			GP	Gasoline (F
Automated Manual with paddles			All Wheel IFVGAV02.0	15			GP	Gasoline (F
Automated Manual with paddles			All Wheel IFVGAV02.0	15			GP	Gasoline (F
Automated Manual with paddles			2-Wheel DFVGAV02.0	15			GP	Gasoline (F



Model	Year	Make	Model	Year	Make	Gas Guzzl	Gas Guzzl	2Dr Pass	2Dr Lugg	4Dr Pass	4Dr Lugg	Htchbk Pa	Htchbk Lu
Mpl	1986	1986	1986	1986	1986	Not exemp	86	12					
Mpl	1986	1986	1986	1986	1986	Not exemp	86	10					
Mpl	1986	1986	1986	1986	1986	Not exemp	86	10					
Mpl	1986	1986	1986	1986	1986	Not exemp	74	13					
Mpl	1986	1986	1986	1986	1986	Not exempt							
Mpl	1986	1986	1986	1986	1986	Not exempt						93	14

Annual Fuel	EPA Calculated	Comment	City2 FE (Hwy2 Fuel Comb2 Fuel)	Low'd City	Low'd Hwy	Low'd Cor	City2 Unadjusted
1900	1900	corrected fuel					
2200	2200						
2100	2100						
2200	2200						
2200	2200						
2050	2050	SMOG corrected to 9 as this is a nationwide Tier 2 BIN 2 and Calif PZEV					

Model Year 2017-2018 EPA Fuel Economy Alternative Fuel  
Hwy 2 City 2 Comb 2 Unit 2 City 2 Unit Hwy 2 Unit Comb 2 Unit Range 2 - Fuel 2 Use Fuel 2 Use Fuel 2 Unit Fuel 2 Unit

Relative Fuel	CO2 I	CO2 H	CO2 Comb	CO2 Fuel	CO2 EPA	Description	Intake Val	Exhaust V	Carline C	Carline C
						SIDI;	2	23		Subcompa
						SIDI;	2	23		Subcompa
						SIDI;	2	23		Subcompa
						SIDI;	2	23		Subcompa
						SIDI;	2	21		Two Seate
						SIDI;	2	24		Compact C

Car/Truck	Calc Appr Sales	Release Date	EPA FE Label Data	Unique La	Label Rec	Relabel	Relabel D
car	Vehicle Specific 5-cycle label	1/15/2014	15307		N	N	
car	Vehicle Specific 5-cycle label	1/15/2014	15295		N	N	
car	Vehicle Specific 5-cycle label	1/15/2014	15294		N	N	
car	Vehicle Specific 5-cycle label	1/15/2014	15302		N	N	
car	Vehicle Specific 5-cycle label	1/15/2014	15303		N	N	
car	Vehicle Specific 5-cycle label	1/1/2014	15293		N	N	

Suppress	Police/Em	Comment	Cyl Deact	Cyl Deact	Var Valve	Var Valve	Var Valve	Var Valve	Energy St
N	N	1.8L Engine	N	Y	CONTINUCN				
N	N	2.0L Engine	N	Y	CONTINUCY		Audi Valve		
N	N	2.0L Engine	N	Y	CONTINUCY		Audi Valve		
N	N	Generator	N	Y	CONTINUCN				
N	N	Generator	N	Y	CONTINUCN				
N	N	2.0L Engine	N	Y	CONTINUCY		Audi Valve		

Device Des	Battery	Battery Ty	Battery Ty	Total Volt	Batt Ener	Batt Spec	Batt Char	Comment	# Capacit
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Regen BrzRegen BrzRegen BrzDriver CntFuel Cell [Usable H2Fuel Cell (HEV-EV C# Drive M<Motor Ger



Motor Ger	Rated Mot	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Cell V	Off Board	Camless V	Oil Viscosi
				GDI	Spark Ignit			N	5W40 VW
				GDI	Spark Ignit			N	5W40 VW
				GDI	Spark Ignit			N	5W40 VW
				GDI	Spark IgnitN			N	5W40
				GDI	Spark IgnitN			N	5W40
				GDI	Spark Ignit			N	5W40 VW

Stop/Start	Stop/Start	Trans in FE	Trans as I	Model Typ	Charge De	Charge De	Charge Su	Charge Su	EPA Calcul
------------	------------	-------------	------------	-----------	-----------	-----------	-----------	-----------	------------

N	No	Auto	(AM-5	Auto	(AM-5				
N	No	Auto	(AM-5	Auto	(AM-5				
N	No	Auto	(AM-5	Auto	(AM-5				
N	No	Auto	(AM-5	Auto	(AM-5	TT Coupe c			
N	No	Auto	(AM-5	Auto	(AM-5	TT Coupe c			
N	No	Auto	(AM-5	Auto	(AM-5				

Model Year	EPA Calculated Gas	GEZ Rating	(GHG Rating)	#1 Smog R	#1 Mfr Sm	#1 EPA Sm	SmartWay
36.2		7	7 FVGAV02.0		9		
34.3		6	6 FVGAV02.0		9		
35.2		7	7 FVGAV02.0		9		
33.3		6	6 FVGAV02.0		5		
33.3		6	6 FVGAV02.0		5		
35.9		7	7 FVGAV02.0		9		

Signal 10 Pull #56 Test #6 for Test Group A) #3 Smog R #3 Mfr Sm #3 EPA Sm SmartWay #4 Smog R #4 Mfr Sm





City	State	Model Year	Make	Model	Distance	Comb Vol	Higher	Final Label	EPA_FUEL	EPA_GHG	EPA_AMT
N					3.6			3.6			
N					3.8			3.8			
N					3.7			3.7			
N					3.8			3.8			
N					3.8			3.8			
N					3.6			3.6			

2017-FFP\_007495



PLANT\_HVAC\_CO2EPA\_UNRLEPA\_UNRLEPA\_ADJ\_EPA\_PHEVLabel SubrGHG 1-10 rating on Ethanol (EPA Deter

Mr Richard E Thomas Jr

Mr Richard E Thomas Jr

Mr Richard E Thomas Jr

Mr Richard E Thomas Jr

Mr Richard E Thomas Jr

Mr Richard E Thomas Jr

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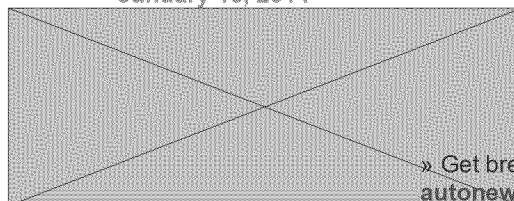


**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Wed 1/15/2014 9:34:51 PM  
**Subject:** DAILY: GM's Ammann upbeat on Opel, product portfolio and transaction prices | UAW members will 'overwhelmingly' back dues hike, King says | Subaru on track for 500,000 U.S. sales by 2016

Today's most read story

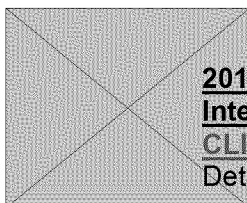
**Acura's TLX to do double duty**

January 15, 2014



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#### **GM's Ammann upbeat on Opel, product portfolio and transaction prices**

3:00 pm U.S. ET | Jan 15

General Motors' European Opel unit is in "the best shape it's been in a very long time" and gained market share for the first time in 14 years in 2013, GM President Dan Ammann said today. ... » [READ](#)

### **2014 AUTOMOTIVE NEWS WORLD CONGRESS**

#### **UAW members will 'overwhelmingly' back dues hike, King says**

2:31 pm U.S. ET | Jan 15

UAW President Bob King today said he believes workers will "overwhelmingly" support increasing dues

for the first time since 1967 to shore up the union's strike fund and help it win better contracts. ... » [READ](#)

#### **2014 AUTOMOTIVE NEWS WORLD CONGRESS**

### **Subaru on track for 500,000 U.S. sales by 2016, says Doll**

10:58 am U.S. ET | Jan 15

Subaru of America sales will likely grow to 500,000 units by 2016 as the brand adds capacity at its only plant in the United States, said company President Tom Doll. ... » [READ](#)

### **GM expects 'modest' gain in U.S. retail market share in 2014**

UPDATED: 1/15/14 9:35 am ET - new story

7:51 am U.S. ET | Jan 15

General Motors expects to gain "modest" market share at the retail level in the United States this year while continuing to command strong prices, the company said today as its new executive management team took charge. ... » [READ](#)

### **Acura mulls Honda Fit-based compact crossover**

9:55 am U.S. ET | Jan 15

Acura is considering a compact crossover to complement the Honda brand's upcoming Fit-based utility vehicle. ... » [READ](#)

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### **Business center is 'heartbeat of the dealership'**

12:01 am U.S. ET | Jan 13

Dealer Henry Brown, 69, has built two wildly successful dealerships in his time. ... » [READ](#)

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**JIM HENRY**

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- » [Toyota's FT-1 concept hints at future sports car](#)
- » [Overproduction, hefty spiffs sink residuals of Cadillac ATS](#)

### [GM picks Steve Hill to succeed Batey in U.S. sales post](#)

2:00 pm U.S. ET | Jan 15

### [Cadillac's big moment in song](#)

2:15 pm U.S. ET | Jan 15

### [GM to pay first dividend in 6 years](#)

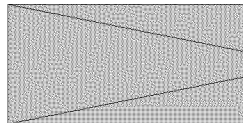
UPDATED: 1/14/14 7:53 pm ET - adds more executive moves  
5:10 pm U.S. ET | Jan 14

### [Ford's Fields: 'Automotive has all of the excitement of Silicon Valley'](#)

10:20 pm U.S. ET | Jan 14

### [Ford to drop F-150 Tremor from truck lineup](#)

UPDATED: 1/14/14 5:39 pm ET  
5:23 pm U.S. ET | Jan 14



#### **ARCHIVED WEBINARS**

- » [12/3 - Global Supply Chain](#) by HP
- » [11/19 - Pre-Owned Strategies](#) by FirstLook
- » [11/14 - What Influences Consumers?](#) by Microsoft
- » [11/12 - Building the Best](#) by Automotive News
- » [1/30 - Engineers - A Scarce Commodity](#) by Automotive News

- » [Jan. 14-15, 2014 - World Congress](#)
- » [April 7, 2014 - PACE Awards](#)
- » [May 14 - Marketing](#)

**Ford wins 4th straight Polk  
award for most-loyal  
customers**

5:07 pm U.S. ET | Jan 14

**Hyundai sits out small  
crossover utility boom as  
rivals gear up**

10:56 am U.S. ET | Jan 15

**Software -- the new  
battleground**

12:01 am U.S. ET | Jan 15

**Manheim, AutoTrader leader  
says transparency 'makes  
everybody a winner'**

11:18 am U.S. ET | Jan 15

**New approach to collaboration  
needed for auto innovation,  
panel says**

12:10 pm U.S. ET | Jan 15

**'Digital first' is now automaker  
marketing execs' mantra**

6:24 pm U.S. ET | Jan 14

**Lexus exec sees more gains in  
U.S., emerging markets**

1:31 pm U.S. ET | Jan 15

**Toyota tops 1 million in global  
hybrid sales, but growth slows**

10:18 am U.S. ET | Jan 15

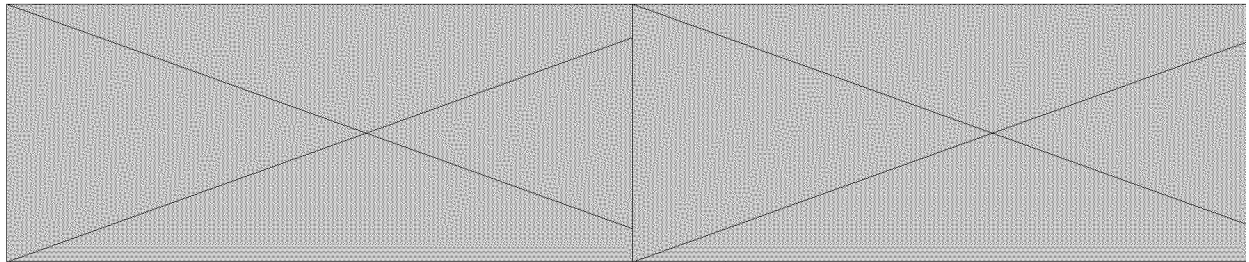
**Toyota wants a bulletproof fuel-  
cell entry**

5:54 pm U.S. ET | Jan 14



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**Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207**

**To:** Good, David[good.david@epa.gov]  
**Cc:** **Ex. 7**  
**From:**  
**Sent:** Thur 1/16/2014 12:41:57 PM  
**Subject:** RE: 2015 FE Guide as of 1/15/2014 attached

Morning Dave;

Thanks, it looks good with one exception. Column 4 and 5 lists the Mfr Name and Division respectively. We are now using the VGA for the Volkswagen Group of America manufacturer, but which division name will appear on the web site the short division name or the full division name? Our full name, for example Volkswagen **AG**, appears on the certificate. We of course would rather see the short name or just Volkswagen or Audi appear in the guide. Please call me so we can discuss.

Thanks,

**Ex. 7**

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Wednesday, January 15, 2014 3:32 PM  
**To:** **Ex. 7**  
**Subject:** 2015 FE Guide as of 1/15/2014 attached

**Ex. 7**

Our macro didn't pick up any errors.

Dave



**From:** Snyder, Jim

**Required Attendees:** Snyder, Jim; Paulina, Carl; [Ex. 7] (EEO); Wright, DavidA; [Ex. 7]@vw.com

**Optional Attendees:** Dalton, Joel; Ball, Joel; Wehrly, Linc; Ott, William; Anderson, Tom; McBryde, Dan; [Ex. 7] (EEO)

**Location:** AA-Room-Office-N66-ConfRoom/AA-OTAQ-OFFICE

**Importance:** Normal

**Subject:** VW: Fuel Cell certification and Testing

**Start Date/Time:** Wed 1/22/2014 6:00:00 PM

**End Date/Time:** Wed 1/22/2014 7:00:00 PM

This mtg is for VW to give a very short overview of a future Fuel cell vehicle, and then ask questions about how to certify and test it.

I invited several of you to optionally attend.

**From:** Snyder, Jim  
**Required Attendees:** Paulina, Carl; Johnson, Stuart (EEO) [Stuart.Johnson@vw.com];  
Wright, DavidA; jenny.sigelko@vw.com  
**Optional Attendees:** Dalton, Joel; Ball, Joel; Wehrly, Linc; Ott, William; Anderson,  
Tom  
**Location:** AA-Room-Office-N66-ConfRoom/AA-OTAQ-OFFICE  
**Importance:** Normal  
**Subject:** VW: Fuel Cell certification and Testing  
**Start Date/Time:** Wed 1/22/2014 6:00:00 PM  
**End Date/Time:** Wed 1/22/2014 7:00:00 PM

When: Wednesday, January 22, 2014 1:00 PM-2:00 PM (GMT-05:00) Eastern Time (US & Canada).

Where: AA-Room-Office-N66-ConfRoom/AA-OTAQ-OFFICE

Note: The GMT offset above does not reflect daylight saving time adjustments.

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

This mtg is for VW to give a very short overview of a future Fuel cell vehicle, and then ask questions about how to certify and test it.

I invited several of you to optionally attend.

**From:** Snyder, Jim

**Required Attendees:** Paulina, Carl; [Ex. 7]@vw.com];  
Wright, DavidA; [Ex. 7]@vw.com

**Optional Attendees:** Dalton, Joel; Ball, Joel; Wehrly, Linc; Ott, William; Anderson, Tom

**Location:** AA-Room-Office-N66-ConfRoom/AA-OTAQ-OFFICE

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This mtg is for VW to give a very short overview of a future Fuel cell vehicle, and then ask questions about how to certify and test it.

I invited several of you to optionally attend.

**To:** Johnson, Stuart (EEO)[Stuart.Johnson@vw.com]  
**From:** Snyder, Jim  
**Sent:** Thur 1/16/2014 9:26:56 PM  
**Subject:** Fuel Cell testing

Stuart , I talked to Jenny today and scheduled a mtg. FYI, I'm told SAE J2572 is the recommended doc for testing procedure.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Fri 1/17/2014 12:31:24 PM  
**Subject:** 2015 Model Added

Hi Dave;

For your information I have now labeled the 2015 Volkswagen GTI with manual six speed transmission. It resides in Verify.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Johnson, Stuart (EEO)  
**Sent:** Fri 1/17/2014 12:44:12 PM  
**Subject:** RE: Fuel Cell testing

Hello Jim,

Thanks! Looking forward to seeing you next week.

Have a good weekend,

Stu

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]  
**Sent:** Thursday, January 16, 2014 4:27 PM  
**To:** Johnson, Stuart (EEO)  
**Subject:** Fuel Cell testing

Stuart , I talked to Jenny today and scheduled a mtg. FYI, I'm told SAE J2572 is the recommended doc for testing procedure.

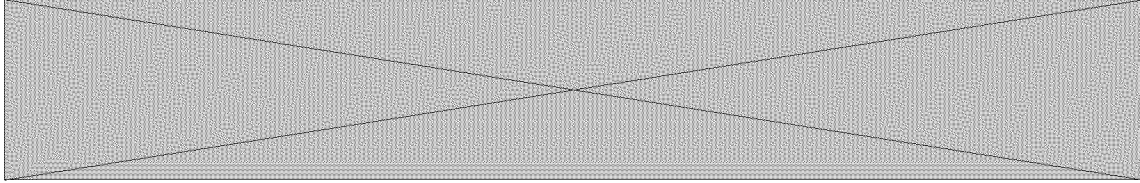
Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Johnson, Stuart (EEO)  
**Location:** AA-Room-Office-N66-ConfRoom/AA-OTAQ-OFFICE  
**Importance:** Normal  
**Subject:** Accepted: VW: Fuel Cell certification and Testing  
**Start Date/Time:** Wed 1/22/2014 6:00:00 PM  
**End Date/Time:** Wed 1/22/2014 7:00:00 PM

;

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Fri 1/17/2014 5:03:33 PM  
**Subject:** Green Car Report Daily Headlines

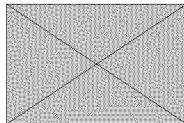
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The latest from your friends at GCR:

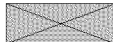
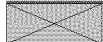
## [2015 Audi A3 Prices, Nissan Electric-Car Design, NYC Electric Taxis: Today's Car News](#)

Jan 17, 2014 04:55 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



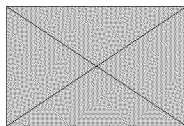
Today on Green Car Reports: New York City issues a road map for electrifying one-third of its taxi fleet, detailed pricing information the 2015 Audi A3 sedan is released, and Nissan's design director discusses future electric-car plans. All this and more on Green Car Reports. See the 2015 Honda Fit in our video summary from the 2014 Detroit Auto...

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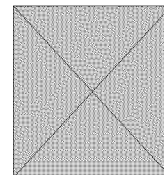
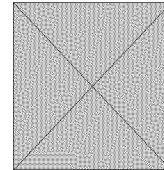
## [Nissan Electric Cars To Be Split Into Three Different Types: Design Director](#)

Jan 17, 2014 02:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Fed up of waiting for a cheaper, smaller electric car from Nissan, or something a bit more interesting and sportier than the Leaf? You may not have to wait much longer. In an interview with Motor Authority, Nissan's global design chief Shiro Nakamura says Nissan's

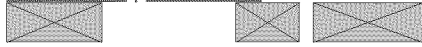
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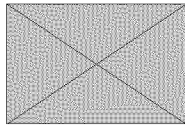
electric car plans will take three different paths in the future. One of these will...

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## Hybrids, Electrics Not Needed To Reach 54.5 MPG In 2025: Industry Exec

Jan 17, 2014 01:42 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



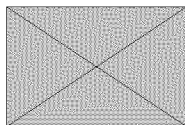
For some companies in the auto industry, building cars to hit a target of 54.5 mpg by 2025 may seem like a near-impossible task. But to others, the EPA's Corporate Average Fuel Economy targets agreed in 2011 aren't simply achievable by that date, but could be reached today--and with today's technology. Start-stop, turbos, direct injection Speaking...

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## VL Destino Faces Uncertain Fisker Future For Its Non-Electric Karma

Jan 17, 2014 01:29 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



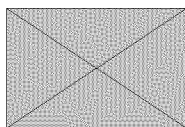
Engine swaps are one thing; complete powertrain replacements are another. But if your business is yanking range-extended electric running gear out of a stunning-looking car from a now-bankrupt company, and replacing it with Corvette power, there are two ways you can go. Swaps, new cars You can wait for the limited universe of Fisker Karma...

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## 2015 Audi A3 Sedan Priced From \$29,900

Jan 17, 2014 12:20 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



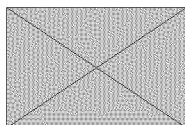
Audi has announced pricing for the first two variants of its all-new 2015 A3 sedan, on sale soon. With the base engine, a 1.8-liter, four-cylinder turbocharged unit badged TFSI, you'll pay \$29,900—while the more powerful 2.0 TFSI, also a turbocharged gasoline model, begins at \$32,900. To each of those you can add Audi's standard \$895 destination...

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## NYC Issues Roadmap For Electrifying One Third Of Taxis By 2020

Jan 17, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



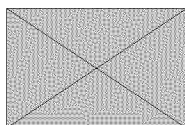
The electrification of New York City streets is continuing. In addition to passing legislation that will make 20 percent of new parking spaces electric-car ready, the city government would like to make one third of New York taxicabs electric by 2020. Mayor Michael R. Bloomberg set that goal in his January 2013 State of the City Address, and...

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## Mercedes-Benz S-Class Plug-In On Sale Early 2015, C-Class Hybrid Later

Jan 16, 2014 09:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Bengt Halvorson)



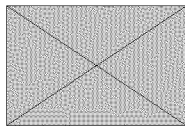
While Mercedes-Benz and other German luxury automakers (Audi, especially) are betting on diesel powertrains on a larger scale in helping to make their lineups more fuel-efficient, they're starting to concede that to some luxury shoppers, plug-in hybrids are seen as a 'greener' solution—especially in tight urban spaces. That's where the...

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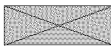
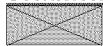
## 2015 Honda Fit: Video Summary From Detroit Auto Show

Jan 16, 2014 05:55 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



Undoubtedly the most important green car at a rather scattered Detroit Auto Show, the 2015 Honda Fit promises to be a strong entry in the subcompact segment when it arrives this spring. MORE: 2015 Honda Fit: Full Details From 2014 Detroit Auto Show The latest generation of the most flexible and versatile small hatchback on the market, the new Fit...

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**From:** Kata, Leonard (EEO)  
**Location:** AA-Room-Office-N66-ConfRoom/AA-OTAQ-OFFICE  
**Importance:** Normal  
**Subject:** Accepted: FW: Fuel Cell certification and Testing  
**Start Date/Time:** Wed 1/22/2014 6:00:00 PM  
**End Date/Time:** Wed 1/22/2014 7:00:00 PM

**To:** French, Roberts[french.roberts@epa.gov]  
**From:** Good, David  
**Sent:** Fri 1/17/2014 10:21:25 PM  
**Subject:** FW: VWGoA PHEV Test Procedures Question  
[2014 generic EV Label calculations-1-18-13.xlsm](#)  
[2014 Generic non-blended PHEV FE Label calculator 713.xlsx](#)  
[non-blended PHEV Utility Factor calculator-\(dgood\)-4-4-2012.xlsx](#)  
[PHEV\\_AER\\_CO2evaluation-from Lothar-11-20-2013.pdf](#)

FYI

Dave

**From:** Good, David  
**Sent:** Wednesday, November 20, 2013 12:55 PM  
**To:** [Ex. 7] 'synder.jim@epa.gov'  
**Cc:** [Ex. 7] French, Roberts; Ott, William  
**Subject:** RE: VWGoA PHEV Test Procedures Question

**Ex. 7**

For CO2 calculations, you should use the CD emissions up to and including the 3.59 or 3.91 mile transition bag (not the 7.5 mile transition UDDS cycle). You should use the sequential multi-day individual utility factors (MDIUFs) not the fleet utility factors shown in your spreadsheets, ref 600.116(b)(2) Table 3. [The utility factors shown in your spreadsheets are not correct.]

1. Start by calculating a running utilized adjusted CO2 value (e.g. tested CO2/0.7) for each sequential 3.59 or 3.91 bag (including the transition bag). That becomes your adjusted city CD CO2 emission value (grams/mi). See 600.116(b)(2) and Table 3 in those regulations. [For your base example, I calculate sequential CD city CO2 value of zero for bags 1-13 and 1.65 g/mi for bag 14 ( $82.40 \times .02 = 1.65$  g/mi) for a total CO2 value over the 14 bag cycles of 1.65 g/mi.]

2. Next, you use the sum of the sequential MDIUFs to determine the total MDIUF---which

will be used to combine the adjusted city CD CO2 emission value (gr/mi) with the adjusted highway CS CO2 value.

3. Next, use this same approach for the highway test using the sequential MDIUF's in 600.116(b)(2) Table 4----to determine the adjusted highway CD CO2 emission value (in grams/mile).

4. Next, you combine the city CD CO2 value with the city CS CO2 value (determined from a separate 4-bag FTP) using the formula  $CO_2 \text{ (Utilitized city)} = (UF_{city} \times CD \text{ CO}_2) + [(1 - UF_{city}) \times CS \text{ CO}_2]$ .

5. Next you combine the hwy CD CO2 value with the hwy CS CO2 similarly.

6. Then you combine the city & highway CO2 values using a straight arithmetic average (not a harmonic average) weighting the city CO2 value 55% and the highway CO2 value 45%.

For the fuel economy, annual fuel cost values, etc---which go on the FE Labels, you should use Chris Never's spreadsheet.

Attached are FE Label calculators for EVs and for non-blended PHEVs. Also attached is a utility factor calculator for non-blended PHEVs.

Hope this helps.

Dave

**From:** [REDACTED] **Ex. 7**  
**Sent:** Wednesday, November 20, 2013 9:07 AM  
**To:** 'synder.jim@epa.gov'; Good, David  
**Subject:** WG: VWGoA PHEV Test Procedures Question

Hello Jim and Dave,

there are a presentation with a question about PHEV and CO2 calculation.

Best regards

**Ex. 7**

Mit freundlichen Grüßen

**Ex. 7**  
Aggregatezulassung Ingolstadt

AUDI AG  
I/EA-523  
D-85045 Ingolstadt  
Tel.: [REDACTED] **Ex. 7**

**Ex. 7**  
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Derived 5-cycle MPG Calculations For Electric Vehicles

Please Enter:

Model Year: 2014  
Manufacturer Name: xxxxxxxx  
Model Name: yyyyyyyy  
Test Date: xx/yy/2013

Values in Yellow fill are used on FE Labels (window stickers)

I. Calculate Electric vehicle FE Label city, Hwy, Combined FE values using the 2008 (derived 5-cycle) method and the 30% cap method:

Enter unadjusted unrounded kW-hr/100mi Values (in red text blocks) as determined from SAE J1634:

2008 FE Label method (Derived 5-cycle)

Derived 5- Derived 5- Adjusted  
cycle City cycle Hwy Combined Units

	City	Highway	Combined
	(round mpg to 0.1mpg)	(round mpg to 0.1mpg)	Calculated combined Units
Elect veh FE unrounded kW-hr/100 mi	19.3900	25.3000	22.0495 kW-hr/100 mi
Elect veh FE converted to mpg	173.8	133.2	152.8366 mpg

Calculate derived 5-cycle mpg: 99.5 87.1 93.5 mpg  
convert back to kW-hr/100 mi: 33.9 38.7 36.0 kW-hr/100 mi  
Percent adjustment mpg: 42.8% 34.6% 38.8% percent  
MPG w/ 30% Cap 121.7 93.2 106.9856 MPGe with 30 % Cap  
convert back to kW-hr/100 mi: 27.7043 36.1486 31.5042 kW-hr/100 mi w/30 % Cap  
31.5

2014 Label Values:

Rounded MPG w/30% cap: 122 93 107  
Rounded kW=hr/100 mi: 28 36 32

II. Calculate Electric vehicle driving ranges using the unadjusted SAE J1634 method and the 2008 (derived 5-cycle) method:

Enter unadjusted City & Hwy Range Values in miles (in red text blocks) as determined from SAE J1634:

	City Range	Hwy Range	Combined Range	Rounded Range	Units
Calculate unadjusted driving range:	111.293	89.42	101.4502	101	miles
Calculate adjusted driving range (2008 method, No Cap):	63.7	58.5	62.0636	62	miles
Calculate adjusted driving range (2008 method, 30% Cap):	77.9	62.6	71.0151	71	miles

Method:  
Unadjusted (SAE J1634)  
2008 (derived 5-cycle, mpg-based, No Cap)  
2008 (derived 5-cycle, mpg-based, 30% Cap)

III. Calculate Electric vehicle annual fuel cost and 5-year savings, per 40 CFR 600.311-12(e)

2008 MPG Factors:  
ref. 40 CFR 600.210-08  
City Intercept: 0.00326  
City Slope: 1.1805  
Hwy Intercept: 0.00138  
Hwy Slope: 1.3466

Enter Average 2014 5-year Fuel Cost: \$11,500  
Enter U.S. electricity costs: \$0.12 per kw-hr  
(from CD-12-18 for 2014)  
Calculate unrounded adjusted combined miles/kw-hr: 3.17418 mi/kw-hr

Petroleum Equivalency Factor  
for electricity; ref 10 CFR 474.3  
  
33,705 watt-hr/gallon w/o 6.667 CAFE incentive  
no fuel fired accessories

Annual Miles	Cost	Units	Unrounded Annual Fuel Cost*	Method
15,000	\$0.12	per kw-hr	\$648.00	2008 (derived 5-cycle, mpg-based, No Cap)
15,000	\$0.12	per kw-hr	\$567.08	2008 (derived 5-cycle, mpg-based, 30% Cap)

2014 Label Rounded Annual Fuel Cost	2014 Label 5-year Amount You Save:
\$650.00	\$8,250
\$550.00	\$8,750

\*Note: Annual fuel costs should be ASTM rounded to the nearest \$50.



# 2013 Generic PHEV FE Label Calculator - based on Fisker 2012 test data (where CS method = 5-cycle)

original test data from Chris 3/7/2012; Redline = FE Label Calcs by D. Good 5/29/2012; blue =D.Good 8/21/12

Note: Rounding in this spreadsheet is per Excel (not ASTM)---you need to double check the spreadsheet rounding.

	<u>EPA City1</u>	<u>EPA Hwy1</u>
recharge	20.4190kWhrs	20.2480
Cd miles	50.2980miles, raw	47.6800
Consumption	40.5960kWhrs/100 miles,raw	42.4700
MPGe	83.0253Raw	79.3619
MPGe	58.1177Label	55.5533
Consumption	57.9944Label	60.6714
Range	35.2086Label	33.3760
CS Raw mpg	26.7000Raw	30.2000
CS Label mpg	21.1000Label	21.8000
CS CO2 unadjusted	333	296

<u>2014 Fuel Costs:</u>		per CISC-12-18, Nov 16,2012
Electricity:	0.12	\$/kW-hr
Gasoline:	\$3.75	Premium
5 Year Cost:	\$11,500	

	<u>EPA City2</u>	<u>EPA Hwy2</u>
recharge	21.1300kWhrs	20.8700
Cd miles	46.1400miles, raw	46.2800
Consumption	45.7954kWhrs/100 miles,raw	45.0951
MPGe	73.5991Raw	74.7421
MPGe	51.5194Label	52.3195
Consumption	65.4220Label	64.4215
Range	32.2980Label	32.3960
CS Raw mpg	23.3000	29.2000
CS Label mpg	18.5000	21.1000
CS CO2 unadjusted	403	305

## Official Values (harmonic/arithmetic average of EPA1 & EPA2 data)

	<u>Official City</u>	<u>Official Hwy</u>	<u>Combined</u>	
CD miles	48.2190miles, raw	46.9800	<u>Unrounded</u>	<u>Rounded</u>
CD Consumption	43.1957kWhrs/100 miles,raw	43.7825	62.0854	62 kw-hr/100 miles
CD Adj Consumption	61.7082kW-hrs/100 miles,label	62.5465		
CD MPGe, Raw	78.0286Raw	76.9827		
CD MPGe, Label	54.6200Label	53.8879	54.2881	54 mpge
CD Range	33.7533miles, label	32.8860	33.3630	33 miles
CS Raw mpg	24.8844Raw	29.6916		
CS Label unrounded mpg	19.7146Label	21.4443	20.4572	20 mpg
CS Label (rounded) mpg	20Label	21Label		
CS Label gal/100 miles				5.0 gal/100 mi
CS CO2 unadjusted	368.0(2 cycle)	300.5(2 cycle)	337.6000	338
CS CO2 adjusted	458.7(5 cycle)	430.1(5 cycle)	445.7981	446 GHG 1-10 rating
Composite CO2	174.3000(5 cycle)	163.4000(5 cycle)	169.3950	169 10
Fleet UF	0.8600	0.5600		
MDIUF	0.6200	0.6200(revised from 0.6100)		
HOV UF	0.7300	0.7200		

			<u>Combined</u>	
			<u>Unrounded</u>	<u>Rounded</u>
Composite MPGe	32.65182(city)	34.21646(hwy)	33.3378	33
	33.33783(combined)			8

## Annual Fuel Cost Calculations per 600.311-12(e)(3):

CD \$/mile:	\$0.074400using rounded kw-hr/100 mile	\$0.075600	<u>Annual Fuel Cost</u>	
CS \$/mile:	\$0.187500using rounded mpg value	\$0.178571	<u>Unrounded</u>	<u>Rounded</u>
Composite \$/mile:	\$0.117378	\$0.114729	\$1,742.79	\$1,750
Ann Fuel Cost:				
Fuel savings over 5 years:			You Save:	\$2,750 over 5 years

Smog 1-10 Rating: Federal Emission Certification: Bin 5 Smog Rating: 5 per CISC-12-18, Nov 16,2012

Fleet Composite MPGe	60.06864	45.26244	
	52.36093		
HOV MPGe	49.49093	53.23956	Mdiuf w/raw numbers
	51.11035		

**FE Label Utility Factor Calculator (MDIUF using formula from SAE J2841, section 6.2)**

(which is more accurate than using EPA regulations at 600.116-12(b)(2), Tables 3 &amp; 4).

D.Good 11/14/2014

Mfr: XXXX

Vehicle: 2013 XXXX

Model Year: 20XX

DATE: xx/xx/xxxx

Instructions: Enter the Adjusted city &amp; hwy Rcda (e.g. unadjusted Rcda x 0.7) in the light blue fields:

	FUF		MDIUF
	Coefficients for City	Coefficients for Hwy	City/Hwy
1	14.86	4.8	13.10
2	2.965	13	-18.70
3	-84.05	-65	5.22
4	153.7	120	8.15
5	-43.59	-100	3.53
6	-96.94	31	-1.34
7	14.47		-4.01
8	91.7		-3.90
9	-46.36		-1.15
10			3.88

Normalized Distance 399 399 399

City	
Rcda	MDIUF City
52.5196	1.7243277193
52.5196	-0.3239952436
52.5196	0.0119046339
52.5196	0.0024465363
52.5196	0.0001394817
52.5196	-0.0000069694
52.5196	-0.0000027453
52.5196	-0.0000003514
52.5196	-0.0000000136
52.5196	0.0000000061

UF(cumulative) 0.757028968311031

UF(rounded): 0.76

Hwy	
Rcda	MDIUF Highway
42.602	1.3987122807
42.602	-0.2131845815
42.602	0.0063539205
42.602	0.0010592195
42.602	0.0000489847
42.602	-0.0000019854
42.602	-0.0000006344
42.602	-0.0000000659
42.602	-0.0000000021
42.602	0.0000000007

UF(cumulative) 0.696686130597550

UF(rounded): 0.70

D.Good Calcs for Combined city/hwy Utility Factor (for info only)

Combined range = 48.05668

	Coefficients for City	Coefficients for Hwy	City/Hwy
1	14.86	4.8	13.10
2	2.965	13	-18.70
3	-84.05	-65	5.22
4	153.7	120	8.15
5	-43.59	-100	3.53
6	-96.94	31	-1.34
7	14.47		-4.01
8	91.7		-3.90
9	-46.36		-1.15
10			3.88

Normalized Distance 399 399 399

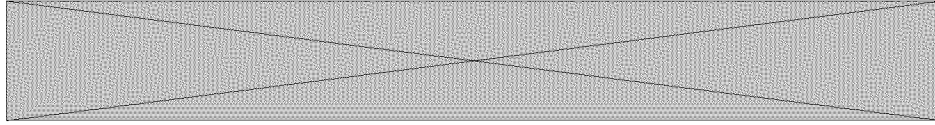
Rcda Combined	MDIUF Combined
48.05668	1.5778007719
48.05668	-0.2712709846
48.05668	0.0091203837
48.05668	0.0017150670
48.05668	0.0000894703
48.05668	-0.0000040906
48.05668	-0.0000014744
48.05668	-0.0000001727
48.05668	-0.0000000061
48.05668	0.0000000025

UF(cumulative) 0.732182357094415

UF(rounded): 0.73

City unadj Rcda:	75.028
No. of UDDS cycles:	10.00373
Hwy unadj Rcda:	60.86
No. of Hwy cycles:	5.90874

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** SAE International  
**Sent:** Mon 1/20/2014 5:12:43 PM  
**Subject:** SAE Hybrid & Electric Vehicles Technology eNewsletter January 2014



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### **Inside Honda's new two-motor 50-mpg Accord Hybrid**

The 2014 Accord Hybrid employs Honda's cleverly designed i-MMD two-motor hybrid system that debuted on the Accord Plug-in Hybrid sedan. Honda's chief engineer provides insight. [Read full story](#)

### **Fuel-cell APUs show promise for heavy-duty truck anti-idling**

A collaborative effort of AVL, Eberspächer, Topsoe Fuel Cell, Volvo, and Forschungszentrum Jülich, called the DESTA project, is exploring the benefits of utilizing solid-oxide fuel-cell APUs to help meet heavy-duty truck anti-idling requirements. In 2014, a vehicle demonstration on board a U.S.-market Volvo Class 8 truck will be performed. [Read full story](#)

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A new system called MSYS is designed to bring greater

smoothness, energy efficiency, and reduced weight to EV and HEV transmissions. [Read full story](#)

### **Thermal management for fuel-cell systems studied**

A cooling architecture should be designed in a way that cooling loops and heat sinks are used by different heat sources, researchers at the Hamburg University of Technology say. [Read full story](#)

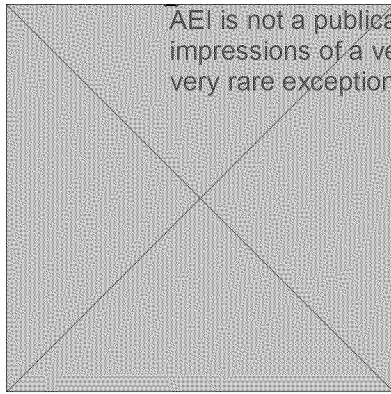
### **Acura RLX Sport Hybrid has impressive economy**

The midsize sedan's 3.5-L V6 powertrain with three-motor hybrid design produces 377 hp, most ever for an Acura. System has latest variant of Acura's Super Handling-All Wheel Drive system, and delivers 28 mpg city/32 mpg highway. [Read full story](#)

### **Fuel savings modeled for hybrid-electric front wheel loader**

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## **On Demand Webcast Featuring: Designing with Aluminum Extrusions**

"Designing with Aluminum Extrusions for Automotive Applications" is a free one-hour webcast that focuses on the practicalities of extrusion design and discusses the attributes of extruded aluminum that make it a material of promise for automotive designers and engineers.

## **Hall-Effect Current Sensing in HEV Applications**

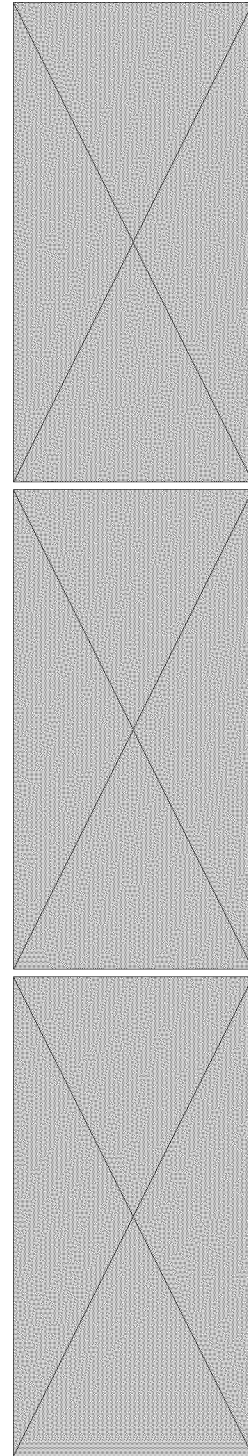
Read more on advances in Hall-effect current sensor IC technology in hybrid electric vehicle applications.

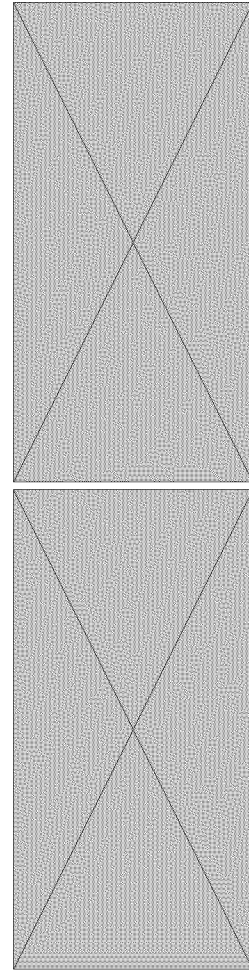
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Power is essential to the design of today's vehicles. For automotive engineers and designers, there's also power in having the most current technical information to solve problems, maintain compliance or ensure quality in your company's products and processes.
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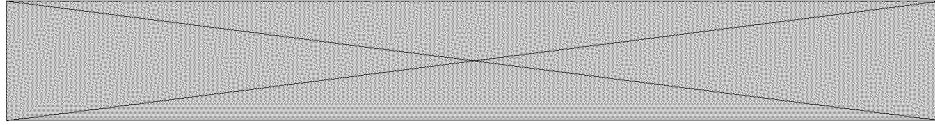
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2014 SAE Hybrid & Electric Vehicles Technology eNewsletter schedule: January, April, July, October

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**To:** Wright, DavidA[Wright.DavidA@epa.gov]  
**From:** SAE International  
**Sent:** Mon 1/20/2014 5:12:43 PM  
**Subject:** SAE Hybrid & Electric Vehicles Technology eNewsletter January 2014



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### **Inside Honda's new two-motor 50-mpg Accord Hybrid**

The 2014 Accord Hybrid employs Honda's cleverly designed i-MMD two-motor hybrid system that debuted on the Accord Plug-in Hybrid sedan. Honda's chief engineer provides insight. [Read full story](#)

### **Fuel-cell APUs show promise for heavy-duty truck anti-idling**

A collaborative effort of AVL, Eberspächer, Topsoe Fuel Cell, Volvo, and Forschungszentrum Jülich, called the DESTA project, is exploring the benefits of utilizing solid-oxide fuel-cell APUs to help meet heavy-duty truck anti-idling requirements. In 2014, a vehicle demonstration on board a U.S.-market Volvo Class 8 truck will be performed. [Read full story](#)

## **2014 COOL PARTS CALENDAR**

Designed by designers and engineered for engineers, our annual Cool Parts Calendar features the visions of product developers across the nation and around the world. It features monthly contests, industry tradeshow dates, and (of course) those elusive days of the week. Request your calendar today.

### **New synchronizer architecture enables more-efficient EVs**

A new system called MSYS is designed to bring greater



smoothness, energy efficiency, and reduced weight to EV and HEV transmissions. [Read full story](#)

### **Thermal management for fuel-cell systems studied**

A cooling architecture should be designed in a way that cooling loops and heat sinks are used by different heat sources, researchers at the Hamburg University of Technology say. [Read full story](#)

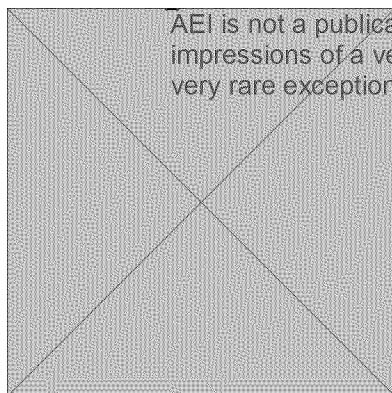
### **Acura RLX Sport Hybrid has impressive economy**

The midsize sedan's 3.5-L V6 powertrain with three-motor hybrid design produces 377 hp, most ever for an Acura. System has latest variant of Acura's Super Handling-All Wheel Drive system, and delivers 28 mpg city/32 mpg highway. [Read full story](#)

### **Fuel savings modeled for hybrid-electric front wheel loader**

Researchers at the University of Illinois-Chicago developed a rule-based control strategy for ease of implementation in industry. [Read full story](#)

### **Volkswagen XL1: driving the technology**



AEI is not a publication that would normally embrace road impressions of a vehicle: the extraordinary Volkswagen XL1 is a very rare exception. [Read full story](#)

## **SAE Video Site**

Load, Link, or Look! A video content repository for the mobility engineering community. Visit now at <http://video.sae.org/>

## **Learn More on the Optimization of the EV/HEV Powertrain Now!**

In this 60-minute webcast, Brian K. Peaslee, Chief Engineer of Propulsion Systems at Magna Electronics, and Dr. Emad Dlala, Application Engineer at ANSYS Inc., discuss the simulation-driven product design process required to arrive at the right, robust, efficient design the first time.

## **On Demand Webcast Featuring: Designing with Aluminum Extrusions**

"Designing with Aluminum Extrusions for Automotive Applications" is a free one-hour webcast that focuses on the practicalities of extrusion design and discusses the attributes of extruded aluminum that make it a material of promise for automotive designers and engineers.

## **Hall-Effect Current Sensing in HEV Applications**

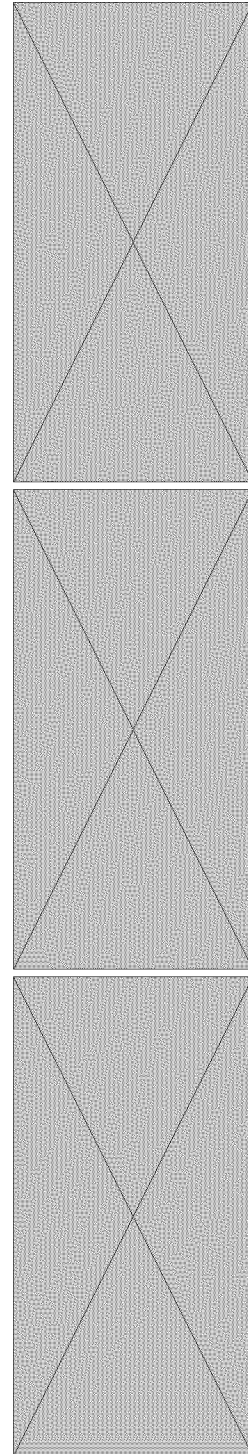
Read more on advances in Hall-effect current sensor IC technology in hybrid electric vehicle applications.

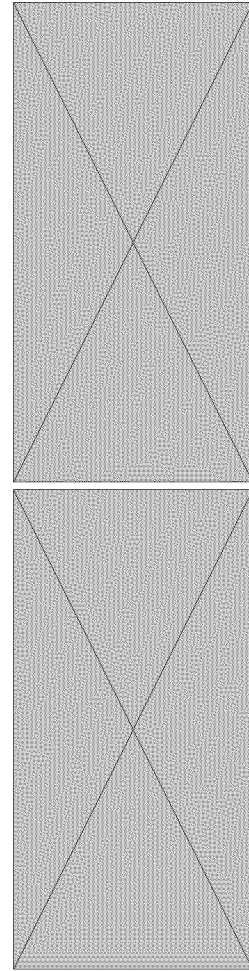
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- *NEW Book!* [Future Automotive Fuels and Energy](#)
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Power is essential to the design of today's vehicles. For automotive engineers and designers, there's also power in having the most current technical information to solve problems, maintain compliance or ensure quality in your company's products and processes.
- SAE Capacitive Energy Storage Battery Standards Development Committee and Chassis Controls Standards Development Committee are [seeking participants.](#)





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**To:** Brooks, Phillip[Brooks.Phillip@epa.gov]  
**From:** Charlotte Linfoot  
**Sent:** Tue 1/21/2014 11:33:08 AM  
**Subject:** WBM 2014 Final Day of Early Booking Rates

Dear Phillip,

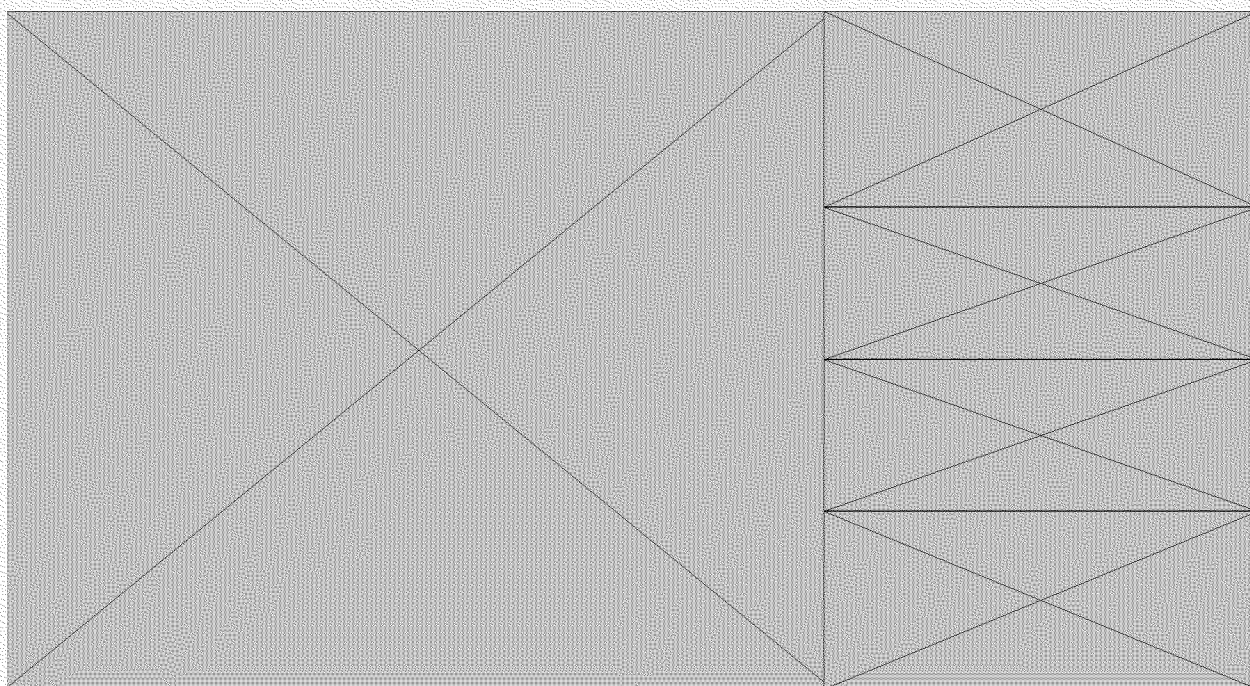
With early booking rates expiring at midnight tonight, we didn't want you to miss out! For all the details see below.

Kind regards,

Dr Charlotte Linfoot  
World Bio Markets Series Director  
T: +44 (0)20 3384 6218  
E: [charlotte.linfoot@greenpowerconferences.com](mailto:charlotte.linfoot@greenpowerconferences.com)

---

**From:** Charlotte Linfoot [<mailto:charlotte@greenpower.msgfocus.com>]  
**Sent:** 15 January 2014 10:23  
**To:** Phillip  
**Subject:** WBM 2014 agenda updated ahead of Early Booking deadline

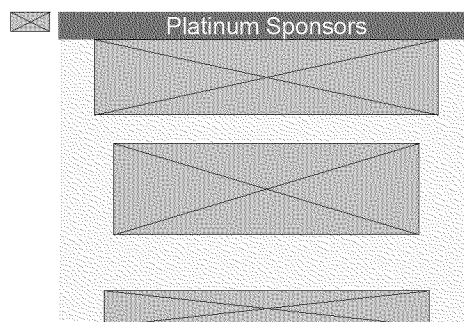


Dear Phillip,

### **Early Booking rates expire in 1 week**

With early booking rates expiring in one week, we thought it best to provide you with the most up to date information on the event.

With new speakers joining an already 160+ strong line-up, the expansion of our Plant Design Process & Optimisation stream and the addition of the Biofuels Trade & Market Dynamics click here to see the latest agenda for the 9th annual World Bio Markets event.





## New speakers include:

### Bio Jet Fuel:

- Jonathon Counsell, Head of Environment, British Airways
- Philippe Marchand, Director of Biotechnologies, Renewable Energy Division, TOTAL

### Bio-based Chemicals & Products:

- Aaron Thornton, Global Marketing Manager, Biorenewables, BASF
- Emmanuel Petiot, Chief Executive Officer, Deinove

### Plant Process Design & Optimisation:

- Frank Malouf, Plant Manager, Louis Dreyfus
- Oded Lerner, Senior Manager, Bio-Products Separation, Tenova Bateman Technologies

### Bio-based Feedstocks:

- Steven Thomas, Feedstocks Technology Manager, Bioenergy Technologies Office Department of Energy
- Martina Otto, Head of Policy Unit Energy Branch, United Nations Environmental Programme

### Sustainability & ILUC:

- Ella Lammers, Senior Advisor, NL Agency
- Chris Malins, Clean Fuels Program Lead, ICCT

[Click here](#) to download the NEW World Bio Markets Brochure

## Registration is open

Save €200! Register before early booking rates  
expire on 22 January!

Join us onsite in March at the 9th annual World Bio Markets. [Register today](#) and take advantage of our early booking rates.

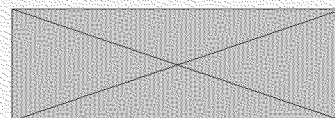
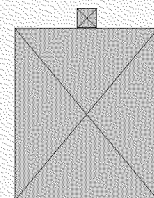
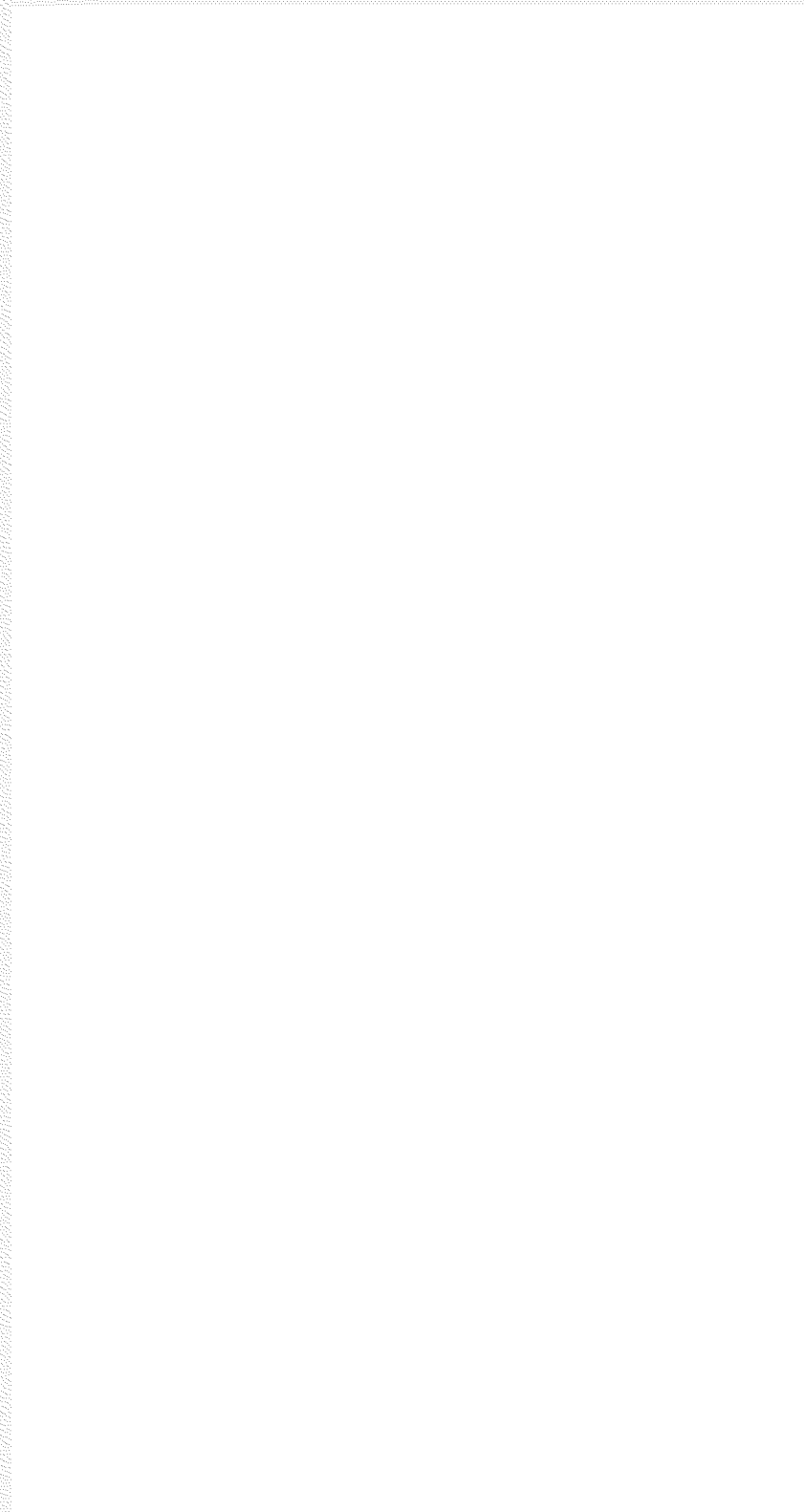
Call: +44 (0)20 7099 0600  
Email: [Samantha.coleman@greenpowerconferences.com](mailto:Samantha.coleman@greenpowerconferences.com)  
Online: [www.worldbiomarkets.com](http://www.worldbiomarkets.com)

We look forward to seeing you in Amsterdam.

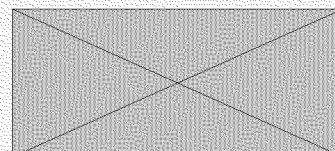
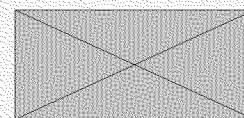
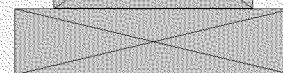
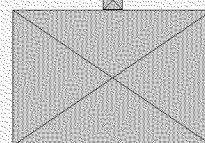
Kind regards,

Dr Charlotte Linfoot  
World Bio Markets Series Director  
T: +44 (0)20 3384 6218  
E: [charlotte.linfoot@greenpowerconferences.com](mailto:charlotte.linfoot@greenpowerconferences.com)

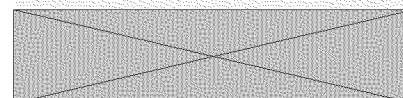
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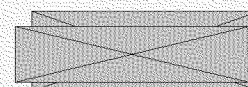


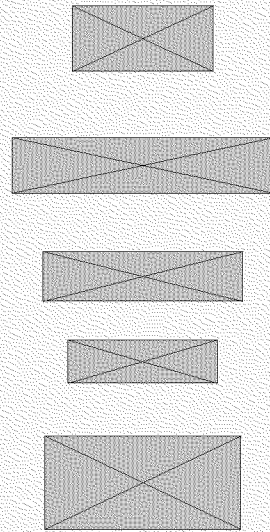
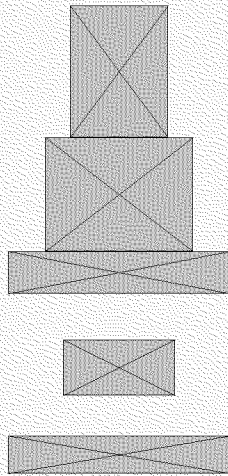
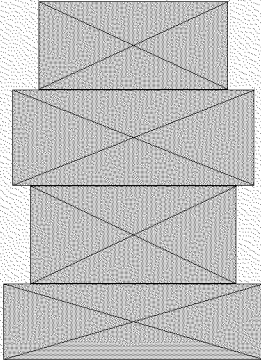
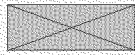
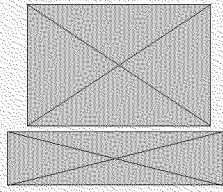
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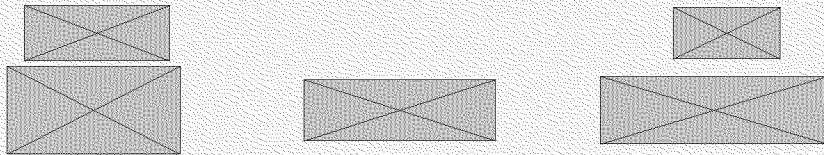




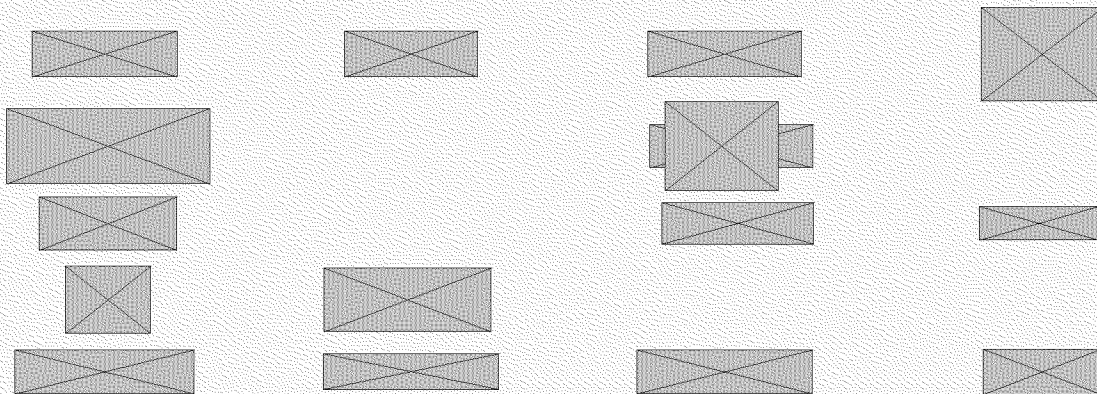
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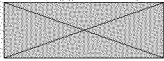
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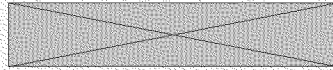






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**To:** Ayala, Alberto@ARB[aayala@arb.ca.gov]; Melissa Jena[mjena@sae.org]; Bill Craven (william.craven@daimler.com)[william.craven@daimler.com]  
**Cc:** alund@ihs.org[alund@ihs.org]; daniel.smith@dot.gov[daniel.smith@dot.gov]; Gloria Bergquist[GBERGQUIST@autoalliance.org]; douglas\_longhitano@ahm.honda.com[douglas\_longhitano@ahm.honda.com]; Grundler, Christopher[grundler.christopher@epa.gov]; Hengst, Benjamin[Hengst.Benjamin@epa.gov]; hideki\_suzuki@ahm.honda.com[hideki\_suzuki@ahm.honda.com]; mbainwol@autoalliance.org[mbainwol@autoalliance.org]; Marc LeDuc[mleduc@sae.org]; McCarthy, Mike@ARB[mmccarth@arb.ca.gov]; Simon, Karl[Simon.Karl@epa.gov]; Stephen.Ridella@dot.gov[Stephen.Ridella@dot.gov]; Stewart, Gwen[Stewart.Gwen@epa.gov]; Tanman, Arman[Tanman.Arman@epa.gov]; Tim Mellon[tim@sae.org]; Wade Newton[wnewton@autoalliance.org]; Will Otero (wotero@autoalliance.org)[wotero@autoalliance.org]  
**From:** Gabriel Nelson  
**Sent:** Tue 1/21/2014 1:53:08 PM  
**Subject:** RE: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions  
[SAE-Questions-1222014.docx](#)

Alberto,  
Thanks for the heads up. Here's hoping that our snowfall isn't too severe and that you're able to make it here without incident.

I've attached a document that compiles my tweaked versions of the questions I have received, and some of my own. It's not exhaustive, but I wanted to give you a chance to review and make any last-minute additions.

Gabe

---

From: Ayala, Alberto@ARB <aayala@arb.ca.gov>  
Sent: Monday, January 20, 2014 11:20 PM  
To: Melissa Jena; Gabriel Nelson; Bill Craven (william.craven@daimler.com)  
Cc: alund@ihs.org; daniel.smith@dot.gov; Gloria Bergquist; douglas\_longhitano@ahm.honda.com; grundler.christopher@epa.gov; Hengst, Benjamin; hideki\_suzuki@ahm.honda.com; mbainwol@autoalliance.org; Marc LeDuc; McCarthy, Mike@ARB; Karl Simon (simon.karl@epa.gov); Stephen.Ridella@dot.gov; Stewart, Gwen; Tanman, Arman; Tim Mellon; Wade Newton; Will Otero (wotero@autoalliance.org)  
Subject: Re: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions

Melissa/Gabe/Bill,  
Bad news. I just got word from the airline that my flight was cancelled. They will try to re-book me so that alternative will determine whether I'll make it since I was only planning a one day trip to DC. Will keep you posted. thanks.

Alberto

---

Alberto Ayala, PhD, MSE  
Deputy Executive Officer  
California Air Resources Board  
916.600.5004 (c)  
aayala@arb.ca.gov

> On Jan 19, 2014, at 11:56 AM, "douglas\_longhitano@ahm.honda.com"  
<douglas\_longhitano@ahm.honda.com> wrote:  
>  
> Hello Gabe,

>

> Sorry you will be working on the holiday, but hopefully you are not working  
> on the weekend. Here are a few questions which I am submitting on behalf  
> of Mr. Sugimoto. I have included some context, but feel free to shape  
> these however you like.

>

> To Sugimoto-san

> The development of regulations for automotive safety is not unique to  
> the United States. In Japan there is a long history of the auto  
> manufacturers, JAMA, working closely with the government, MLIT, to  
> develop effective regulations. Given your long history in the area  
> of crashworthiness and pedestrian protection, can you help us to  
> understand how collaboration was key to creation of some vehicle  
> safety requirement like pedestrian protection?

> A big issue in the US today is Vehicle-to-Vehicle communications.  
> With so much focus recently on things like the Ann Arbor Safety Pilot  
> and DSRC spectrum sharing we might have developed tunnel vision and  
> lost perspective on what is happening in the rest of the world. What  
> is the state of V2V in Japan and how might actions taken in the US  
> effective international manufacturers.

>

> To EPA & CARB

> So many of the recent discussions on the topic of Automated vehicles  
> have focused on possible safety benefits, but it is also well  
> understood that these technologies can have significant environmental  
> benefits. Can you highlight what you see as some of the main the  
> environmental benefits and tell us how your agencies can promote  
> consumer acceptance of these technologies? Can you foresee things  
> like automated vehicle lanes (HOV lanes) or maybe tax credits like  
> are used to promote electric vehicles?

>

> Please let me know if you have any questions about the questions.

>

> Best regards,

>

> Doug Longhitano

>

---

> Douglas Longhitano  
> Safety Research Manager  
> American Honda Motor Co., Inc.  
> 21001 State Route 739  
> Raymond, OH 43067  
> (937)309-9860  
> douglas\_longhitano@ahm.honda.com

>

>

>

>

>

>

>

> From: Gabriel Nelson <gnelson@crain.com>  
> To: Melissa Jena <mjena@sae.org>, "daniel.smith@dot.gov"  
> <daniel.smith@dot.gov>, "aayala@arb.ca.gov"  
> <aayala@arb.ca.gov>, "mmccarth@arb.ca.gov"  
> <mmccarth@arb.ca.gov>, "grundler.christopher@epa.gov"  
> <grundler.christopher@epa.gov>, "Karl Simon

> (simon.karl@epa.gov)" <simon.karl@epa.gov>,  
> "mbainwol@autoalliance.org" <mbainwol@autoalliance.org>, Wade  
> Newton <wnewton@autoalliance.org>, "Stephen.Ridella@dot.gov"  
> <Stephen.Ridella@dot.gov>, "alund@ihs.org" <alund@ihs.org>,  
> Tim Mellon <tim@sae.org>, Marc LeDuc <mleduc@sae.org>,  
> "Stewart, Gwen" <Stewart.Gwen@epa.gov>, "Gloria Bergquist"  
> <GBERGQUIST@autoalliance.org>, "Will Otero  
> (wotero@autoalliance.org)" <wotero@autoalliance.org>,  
> "douglas\_longhitano@ahm.honda.com"  
> <douglas\_longhitano@ahm.honda.com>,  
> "hideki\_suzuki@ahm.honda.com" <hideki\_suzuki@ahm.honda.com>,  
> "Tanman, Arman" <tanman.arman@epa.gov>, "Hengst, Benjamin"  
> <Hengst.Benjamin@epa.gov>,  
> Date: 01/17/2014 04:37 PM  
> Subject: RE: SAE Government/Industry Plenary Session conference call -  
> follow up deadlines/actions  
>  
>  
>  
> Hi everyone,  
> Just a reminder: if you'd like to provide questions that I should ask you  
> and other panelists during the plenary session, please provide them to me  
> ASAP. I plan to start compiling a master list on Monday. (Yes, it's a  
> holiday. I will be working.)  
>  
> Thank you,  
> -----  
>  
> Gabe Nelson  
> Reporter, Automotive News  
> (202) 662-7210  
> gnelson@crain.com  
> Crain Communications Inc., 529 14th St. NW #814, Washington, D.C., 20045  
> Beat: Government policy, Volkswagen and Audi  
> www.autonews.com  
>  
>  
>  
> From: Melissa Jena [mailto:mjena@sae.org]  
> Sent: Wednesday, January 08, 2014 11:50 AM  
> To: Gabriel Nelson; 'daniel.smith@dot.gov'; 'aayala@arb.ca.gov';  
> 'mmccarth@arb.ca.gov'; 'grundler.christopher@epa.gov'; Karl Simon  
> (simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
> Stephen.Ridella@dot.gov; alund@ihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
> Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
> 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
> Arman; 'Hengst, Benjamin'  
> Cc: Melissa Jena  
> Subject: SAE Government/Industry Plenary Session conference call - follow  
> up deadlines/actions  
>  
> As a follow up to our call this morning, please provide 1-2 questions that  
> you would like asked of yourself for the panel and an additional question  
> you would like to ask the other panelists. Please provide your questions /  
> requests no later than next Friday, January 17th to everyone on this email.  
> Gabe will provide everyone his refined list around January 20th. The

> timetable for the event is attached.  
>  
> If you have any additional questions, please let me know. Thank you all  
> for your participation and we look forward to seeing everyone in 2 weeks.  
> Sincerely,  
>  
> \_\_\_\_\_  
> Melissa Jena  
> Project Manager  
>  
> SAE INTERNATIONAL  
> 400 Commonwealth Drive  
> Warrendale, PA 15096  
>  
> o +1.724.772.4008  
> m +1.724.612.3884  
> e mjena@sae.org  
> www.sae.org  
>  
>  
> \_\_\_\_\_  
> From: Melissa Jena  
> Sent: Wednesday, January 08, 2014 6:30 AM  
> To: 'Gabriel Nelson'; 'daniel.smith@dot.gov'; 'aayala@arb.ca.gov';  
> 'mmccarth@arb.ca.gov'; 'grundler.christopher@epa.gov'; Karl Simon (  
> simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
> Stephen.Ridella@dot.gov; alund@iihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
> Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
> 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
> Arman; 'Hengst, Benjamin'  
> Cc: Melissa Jena  
> Subject: SAE Government/Industry Plenary Session conference call - Jan 8;  
> 11:00 AM EDT  
>  
>  
> Just a reminder about the SAE Government/Industry plenary session prep  
> conference call today at 11:00 AM EDT. Call in details below with final  
> speaker line-up. Draft timetable for day of event attached. Hope to talk  
> with everyone or a member of your staff at 11:00 today.  
>  
> << File: Timetableplenary.doc >>  
>  
> \_\_\_\_\_  
> Melissa Jena  
> Project Manager  
>  
> SAE INTERNATIONAL  
> 400 Commonwealth Drive  
> Warrendale, PA 15096  
>  
> o +1.724.772.4008  
> m +1.724.612.3884  
> e mjena@sae.org  
> www.sae.org  
>  
>

> -----Original Appointment-----  
> From: Melissa Jena  
> Sent: Monday, December 09, 2013 12:05 PM  
> To: Melissa Jena; 'Gabriel Nelson'; 'daniel.smith@dot.gov';  
> 'aayala@arb.ca.gov'; 'mmccarth@arb.ca.gov'; 'grundler.christopher@epa.gov';  
> Karl Simon (simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
> Stephen.Ridella@dot.gov; alund@ihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
> Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
> 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
> Arman  
> Cc: Hengst, Benjamin  
> Subject: SAE Government/Industry Plenary Session conference call  
> When: Wednesday, January 08, 2014 11:00 AM-12:00 PM (UTC-05:00) Eastern  
> Time (US & Canada).  
> Where: Conference call  
>  
>  
> Resending with call in numbers.  
>  
> A brief conference call will be held on Wed, Jan 8 at 11:00 AM EST to  
> discuss the SAE Plenary session panel at the Government/Industry Meeting.  
> We hope that you or a member of your staff can participate. Details of the  
> panel are below. If you have any questions, please let me know.  
>  
> Conference Call Dial In Number:  
> 

Ex. 6 - Personal Privacy

  
>  
> Melissa Jena  
> 724-772-4008  
> mjena@sae.org  
>  
> Wednesday, January 22  
> Plenary Session  
> (Session Code: G502)  
> Room 145 AB 3:00 p.m.  
> This year's plenary session will focus on the theme of "Continuing  
> Collaboration for the Protection of all Road Users and the Environment".  
> Government and industry efforts to foster collaboration on all aspects of  
> vehicle safety and environmental issues have made great progress, but there  
> is much left to be done. Panelists will discuss the challenges in these  
> areas that lay ahead and the opportunities as well as barriers that exist  
> to identify and work on these issues together.  
> Moderator - Gabe Nelson, Reporter, Automotive News  
> Panelists -  
> Alberto Ayala, Deputy Executive Officer, California Air Resources Board  
> Mitch Bainwol, CEO, Alliance of Automobile Manufacturers Inc.  
> Tomiji Sugimoto, Executive General Manager, Honda Motor Co., Ltd.  
> Christopher Grundler, Director - Transportation and Air Quality, U.S. EPA  
> Daniel Smith, Senior Associate Administrator for Vehicle Safety, NHTSA  
>  
>  
>  
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> unless a specific statement to the contrary is included in this message.  
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> this message in error, please contact the sender and delete it from your  
> computer.

## QUESTIONS FOR SAE PLENARY SESSION, 1/22/2014

Note: This list is not exhaustive. I will tweak some of the questions and add more -- though I will try to stick to the following topics, to keep it somewhat focused.

- Connected cars
- Fuel economy
- LEV III/Tier 3
- Zero-Emission Vehicles
- Crashworthiness/crash avoidance/automation

### FUEL ECONOMY

-For a program as big as the One National Program, it obviously took a lot of collaboration to get everyone on board with the fuel economy standards. (For each of the panelists) Why were so many stakeholders able to agree on that? And, from what you've seen so far, do you think everyone will stay on board during the midterm review?

(For Mr. Smith and Mr. Grundler)

-NHTSA has always regulated fuel economy. Since you're both on the stage here together, tell me: how have the EPA and NHTSA managed to cooperate on this program?

(For Mr. Sugimoto)

-How will Honda be able to comply? How close can you get to 54.5 mpg with internal-combustion engines?

(For Mr. Bainwol)

-Mitch, with so many big car companies among your members, you work with a big cross-section of the industry. Are they all on board for 2017 to 2025?

(For Mr. Ayala)

-California has a special authority under the Clean Air Act, and if you feel that the fuel economy standards are getting watered down, you don't legally have to stick to the standards set by EPA and NHTSA. You could do your own thing. If you don't like how the midterm review is going, would you ever do that?

(For Mr. Grundler/Ayala/Smith)

-What do we mean by collaboration--joint development of data to support what could be different decisions by different organizations, or joint development of decisions as well?  
-Who should collaborate on safety issues? Who should collaborate on fuel economy/GHG issues? Who represents the public interest?

### CONNECTED CARS



(For Mr. Smith)

-We've been hearing that any day now, NHTSA could be announcing its strategy for getting connected cars on the road. Where do you stand?

(For everyone)

-Everyone seems to agree that technology could provide huge safety benefits. How can the government and industry collaborate to bring us to that future, without stifling innovation?

(For Mr. Bainwol)

In addition to being a lobbying group, the Alliance does a lot of polling of consumers. What have you learned about what they want out of technologies like this one?)

(For Mr. Sugimoto)

-We're focusing on the progress of V2V in the United States, but of course, it is also moving forward in Europe and Japan. How has V2V developed in Japan? Do you think that Japan and the United States will use the same strategy, or will there be major differences?

(For Mr. Grundler/Mr. Ayala)

-A lot of people have suggested that connected and autonomous cars could have big environmental benefits. Do you see that? Can you envision policies to promote them, like special lanes devoted to automated vehicles, or tax credits like the ones for electric vehicles?

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(For Mr. Grundler and Mr. Ayala)

-How have California, the EPA and the industry worked together to align emissions standards?

-Automakers like to sell 50-state vehicles, rather than building different cars for California and the states that follow its standards. How close will this allow them to get?

### ZERO-EMISSION VEHICLES

(For Mr. Ayala)

California and the EPA have come a long way in aligning their fuel economy and tailpipe emissions standards. But there's one big difference: zero-emission vehicles. California rules will require car companies to sell EVs or fuel cell vehicles, and EPA rules will not. Why does that difference exist?

(For Mr. Ayala)

Your boss, Mary Nichols, told reporters the following last fall: "We can't force people to buy cars. There's no advantage to doing that. Our goal is to work with the auto companies." How are you working with them? And how are you going to make sure you have the infrastructure needed to sell EVs and FCEVs?

(For Mr. Bainwol, Mr. Sugimoto)

With the ZEV rules on the books, what is the path forward for the automakers? Mr. Sugimoto, I have driven your Fit EV, and it's a very nice car, but you do not lease very many of them. How are you going to comply?

(For Mr. Grundler)

ZEV sets a goal of 15 percent of the light-duty fleet in the ZEV states being zero-emission vehicles by 2025. From your review for the fuel economy standards, do you think that's doable?

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(For Mr. Smith)

-In what areas is NHTSA currently collaborating with the auto industry, and what are the most important areas for future collaboration in NHTSA's view?

(For Mr. Sugimoto)

-There's a long history in Japan of having the auto industry and the government collaborate on standards – for instance, on pedestrian protection. How does that relationship work in Japan? And how is it different from the relationship in the United States?

(For Mr. Bainwol)

-Mitch, you just attended the Consumer Electronics Show in Las Vegas, which is looking more like an auto show every year. What were your takeaways? At a time when automakers and the government are grappling with distracted driving, did you see a lot of technology that might distract people?

(For the group, but primarily Mr. Smith, Bainwol, Sugimoto)

-While at the Detroit auto show last week, I was struck by the variety we're seeing in crash avoidance systems, like automatic braking. Subaru has EyeSight. Volvo has City Safety. Honda has City-Brake. They all have different names. They all work a little differently. There are no industrywide ratings for what protection they provide. Is this confusing for drivers? Is it time for an industry standard?

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Kata, Leonard (EEO)  
**Sent:** Tue 1/21/2014 2:15:29 PM  
**Subject:** VECI Label for 2015 TDI

Hello Jim:

I wanted to know whether you could give us a quick read on a proposed VECI for the VW 2015 2.0L TDI that we intend to certify to LEV III ULEV 125 in California. I believe that we may have spoken briefly about this already. VW has mocked up a VECI label (shown below). The issue is that EPA does not currently have a Tier 3 program in place and no corresponding Bin for ULEV 125. We propose to follow an approach that we saw on the General Motors VECI label for the 2014 Chevy Cruze Diesel which describes the applicable California emission standard as LEV160, but only describes the EPA standard as Tier 2, with no reference to a Bin.

WE need to get an early “okay” so that labels are available from our supplier in time for production.

Audi LOGO	<b>AUDI AG</b> <b>VEHICLE EMISSION CONTROL INFORMATION</b>		
Conforms to regulations:			2015 MY
U.S. EPA:	Tier 2	LDV	OBD: CA II Fuel: Diesel
California:	ULEV125	PC	OBD: CA II Fuel: Diesel
No adjustments needed.	DF/TC/CAC/WR-HO2S/ OC/DPF-SCRC/SCRC/EGR/EGRC/NOXS		
Group: FVGAV02.0VAL Evap: N/A	8V0 010 504 ??		

Best regards,

Len

---

**Leonard W. Kata**

Senior Manager

Emission Regulations and Certification

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone: (248) 754-4204

Cell: (248) 797-3886

E-Mail: [leonard.kata@vw.com](mailto:leonard.kata@vw.com)

Audi LOGO	AUDI AG VEHICLE EMISSION CONTROL INFORMATION		
Conforms to regulations:			2015 MY
U.S. EPA:	Tier 2 LDV	OBD: CA II	Fuel: Diesel
California:	ULEV125 PQ	OBD: CA II	Fuel: Diesel
No adjustments needed.		DFI/TC/CAC/WR-HO2S/ OC/DPF+SCRC/SCRC/EGR/EGRC/NOXS	
Group: FVGAV02.0VAL Evap: N/A		8V0 010 504 ??	

**To:** Grundler, Christopher[grundler.christopher@epa.gov]; Simon, Karl[Simon.Karl@epa.gov]  
**Cc:** Mylan, Christopher[Mylan.Christopher@epa.gov]  
**From:** Hengst, Benjamin  
**Sent:** Tue 1/21/2014 2:57:56 PM  
**Subject:** Fw: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions  
SAE-Questions-1222014.docx

Chris we will get you draft responses on these, but it is worth your reviewing the questions when you can.  
Ben

---

From: Gabriel Nelson <gnelson@crain.com>  
Sent: Tuesday, January 21, 2014 8:53:08 AM  
To: [Ex. 7] Melissa Jena; Bill Craven (william.craven@daimler.com)  
Cc: alund@ihs.org; daniel.smith@dot.gov; Gloria Bergquist; douglas\_longhitano@ahm.honda.com;  
Grundler, Christopher; Hengst, Benjamin; hideki\_suzuki@ahm.honda.com; mbainwol@autoalliance.org;  
Marc LeDuc; [Ex. 7] Simon, Karl; Stephen.Ridella@dot.gov; Stewart, Gwen; Tanman,  
Arman; Tim Mellon; Wade Newton; Will Otero (wotero@autoalliance.org)  
Subject: RE: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions

[Ex. 7]  
Thanks for the heads up. Here's hoping that our snowfall isn't too severe and that you're able to make it here without incident.

I've attached a document that compiles my tweaked versions of the questions I have received, and some of my own. It's not exhaustive, but I wanted to give you a chance to review and make any last-minute additions.

Gabe

---

From: [Ex. 7]  
Sent: Monday, January 20, 2014 11:20 PM  
To: Melissa Jena; Gabriel Nelson; Bill Craven (william.craven@daimler.com)  
Cc: alund@ihs.org; daniel.smith@dot.gov; Gloria Bergquist; douglas\_longhitano@ahm.honda.com;  
grundler.christopher@epa.gov; Hengst, Benjamin; hideki\_suzuki@ahm.honda.com;  
mbainwol@autoalliance.org; Marc LeDuc; [Ex. 7] Karl Simon (simon.karl@epa.gov);  
Stephen.Ridella@dot.gov; Stewart, Gwen; Tanman, Arman; Tim Mellon; Wade Newton; Will Otero  
(wotero@autoalliance.org)  
Subject: Re: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions

Melissa/Gabe/Bill,  
Bad news. I just got word from the airline that my flight was cancelled. They will try to re-book me so that alternative will determine whether I'll make it since I was only planning a one day trip to DC. Will keep you posted. thanks.

**Ex. 7**

> On Jan 19, 2014, at 11:56 AM, "douglas\_longhitano@ahm.honda.com"  
<douglas\_longhitano@ahm.honda.com> wrote:

>  
> Hello Gabe,  
>  
> Sorry you will be working on the holiday, but hopefully you are not working  
> on the weekend. Here are a few questions which I am submitting on behalf  
> of Mr. Sugimoto. I have included some context, but feel free to shape  
> these however you like.  
>  
> To Sugimoto-san  
> The development of regulations for automotive safety is not unique to  
> the United States. In Japan there is a long history of the auto  
> manufacturers, JAMA, working closely with the government, MLIT, to  
> develop effective regulations. Given your long history in the area  
> of crashworthiness and pedestrian protection, can you help us to  
> understand how collaboration was key to creation of some vehicle  
> safety requirement like pedestrian protection?  
> A big issue in the US today is Vehicle-to-Vehicle communications.  
> With so much focus recently on things like the Ann Arbor Safety Pilot  
> and DSRC spectrum sharing we might have developed tunnel vision and  
> lost perspective on what is happening in the rest of the world. What  
> is the state of V2V in Japan and how might actions taken in the US  
> effective international manufacturers.  
>  
> To EPA & CARB  
> So many of the recent discussions on the topic of Automated vehicles  
> have focused on possible safety benefits, but it is also well  
> understood that these technologies can have significant environmental  
> benefits. Can you highlight what you see as some of the main the  
> environmental benefits and tell us how your agencies can promote  
> consumer acceptance of these technologies? Can you foresee things  
> like automated vehicle lanes (HOV lanes) or maybe tax credits like  
> are used to promote electric vehicles?  
>  
> Please let me know if you have any questions about the questions.  
>  
> Best regards,  
>  
> Doug Longhitano  
>  
> \_\_\_\_\_  
> Douglas Longhitano  
> Safety Research Manager  
> American Honda Motor Co., Inc.  
> 21001 State Route 739  
> Raymond, OH 43067  
> (937)309-9860  
> douglas\_longhitano@ahm.honda.com  
>  
>  
>  
>  
>  
>  
>  
> From: Gabriel Nelson <gnelson@crain.com>  
> To: Melissa Jena <mjena@sae.org>, "daniel.smith@dot.gov"  
> <daniel.smith@dot.gov>, Ex. 7  
> Ex. 7

> **Ex. 7** "grundler.christopher@epa.gov"

> <grundler.christopher@epa.gov>, "Karl Simon  
> (simon.karl@epa.gov)" <simon.karl@epa.gov>,  
> "mbainwol@autoalliance.org" <mbainwol@autoalliance.org>, Wade  
> Newton <wnewton@autoalliance.org>, "Stephen.Ridella@dot.gov"  
> <Stephen.Ridella@dot.gov>, "alund@iihs.org" <alund@iihs.org>,  
> Tim Mellon <tim@sae.org>, Marc LeDuc <mleduc@sae.org>,  
> "Stewart, Gwen" <Stewart.Gwen@epa.gov>, "Gloria Bergquist"  
> <GBERGQUIST@autoalliance.org>, "Will Otero  
> (wotero@autoalliance.org)" <wotero@autoalliance.org>,  
> "douglas\_longhitano@ahm.honda.com"  
> <douglas\_longhitano@ahm.honda.com>,  
> "hideki\_suzuki@ahm.honda.com" <hideki\_suzuki@ahm.honda.com>,  
> "Tanman, Arman" <tanman.arman@epa.gov>, "Hengst, Benjamin"  
> <Hengst.Benjamin@epa.gov>,  
> Date: 01/17/2014 04:37 PM  
> Subject: RE: SAE Government/Industry Plenary Session conference call -  
> follow up deadlines/actions  
>  
>  
>  
> Hi everyone,  
> Just a reminder: if you'd like to provide questions that I should ask you  
> and other panelists during the plenary session, please provide them to me  
> ASAP. I plan to start compiling a master list on Monday. (Yes, it's a  
> holiday. I will be working.)  
>  
> Thank you,  
> ----  
>  
> Gabe Nelson  
> Reporter, Automotive News  
> (202) 662-7210  
> gnelson@crain.com  
> Crain Communications Inc., 529 14th St. NW #814, Washington, D.C., 20045  
> Beat: Government policy, Volkswagen and Audi  
> www.autonews.com  
>  
>  
>  
> From: Melissa Jena [mailto:mjena@sae.org]  
> Sent: Wednesday, January 08, 2014 11:50 AM  
> To: Gabriel Nelson; 'daniel.smith@dot.gov'; **Ex. 7**  
> **Ex. 7** grundler.christopher@epa.gov'; Karl Simon  
> (simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
> Stephen.Ridella@dot.gov; alund@iihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
> Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
> 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
> Arman; 'Hengst, Benjamin'  
> Cc: Melissa Jena  
> Subject: SAE Government/Industry Plenary Session conference call - follow  
> up deadlines/actions  
>  
> As a follow up to our call this morning, please provide 1-2 questions that  
> you would like asked of yourself for the panel and an additional question  
> you would like to ask the other panelists. Please provide your questions /



> requests no later than next Friday, January 17th to everyone on this email.  
> Gabe will provide everyone his refined list around January 20th. The  
> timetable for the event is attached.  
>  
> If you have any additional questions, please let me know. Thank you all  
> for your participation and we look forward to seeing everyone in 2 weeks.  
> Sincerely,  
>  
> \_\_\_\_\_  
> Melissa Jena  
> Project Manager  
>  
> SAE INTERNATIONAL  
> 400 Commonwealth Drive  
> Warrendale, PA 15096  
>  
> o +1.724.772.4008  
> m +1.724.612.3884  
> e mjena@sae.org  
> www.sae.org  
>  
>  
> \_\_\_\_\_  
> From: Melissa Jena  
> Sent: Wednesday, January 08, 2014 6:30 AM  
> To: 'Gabriel Nelson'; 'daniel.smith@dot.gov'; Ex. 7  
> Ex. 7 grundler.christopher@epa.gov'; Karl Simon (  
> simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
> Stephen.Ridella@dot.gov; alund@iihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
> Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
> 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
> Arman; 'Hengst, Benjamin'  
> Cc: Melissa Jena  
> Subject: SAE Government/Industry Plenary Session conference call - Jan 8;  
> 11:00 AM EDT  
>  
>  
> Just a reminder about the SAE Government/Industry plenary session prep  
> conference call today at 11:00 AM EDT. Call in details below with final  
> speaker line-up. Draft timetable for day of event attached. Hope to talk  
> with everyone or a member of your staff at 11:00 today.  
>  
> << File: Timetableplenary.doc >>  
>  
> \_\_\_\_\_  
> Melissa Jena  
> Project Manager  
>  
> SAE INTERNATIONAL  
> 400 Commonwealth Drive  
> Warrendale, PA 15096  
>  
> o +1.724.772.4008  
> m +1.724.612.3884  
> e mjena@sae.org  
> www.sae.org

>  
>  
> -----Original Appointment-----  
> From: Melissa Jena  
> Sent: Monday, December 09, 2013 12:05 PM  
> To: Melissa Jena; 'Gabriel Nelson'; 'daniel.smith@dot.gov';  
> [Ex. 7]grundler.christopher@epa.gov;  
> Karl Simon (simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
> Stephen.Ridella@dot.gov; alund@iihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
> Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
> 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
> Arman  
> Cc: Hengst, Benjamin  
> Subject: SAE Government/Industry Plenary Session conference call  
> When: Wednesday, January 08, 2014 11:00 AM-12:00 PM (UTC-05:00) Eastern  
> Time (US & Canada).  
> Where: Conference call  
>  
>  
> Resending with call in numbers.  
>  
> A brief conference call will be held on Wed, Jan 8 at 11:00 AM EST to  
> discuss the SAE Plenary session panel at the Government/Industry Meeting.  
> We hope that you or a member of your staff can participate. Details of the  
> panel are below. If you have any questions, please let me know.  
>  
> Conference Call Dial In Number:  
> 1-866-469-3239  
> Passcode: [Ex. 7]  
>  
> Melissa Jena  
> 724-772-4008  
> mjena@sae.org  
>  
> Wednesday, January 22  
> Plenary Session  
> (Session Code: [Ex. 7])  
> Room 145 AB 3:00 p.m.  
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> Collaboration for the Protection of all Road Users and the Environment".  
> Government and industry efforts to foster collaboration on all aspects of  
> vehicle safety and environmental issues have made great progress, but there  
> is much left to be done. Panelists will discuss the challenges in these  
> areas that lay ahead and the opportunities as well as barriers that exist  
> to identify and work on these issues together.  
> Moderator - Gabe Nelson, Reporter, Automotive News  
> Panelists -  
> [Ex. 7] California Air Resources Board  
> Mitch Bainwol, CEO, Alliance of Automobile Manufacturers Inc.  
> Tomiji Sugimoto, Executive General Manager, Honda Motor Co., Ltd.  
> Christopher Grundler, Director - Transportation and Air Quality, U.S. EPA  
> Daniel Smith, Senior Associate Administrator for Vehicle Safety, NHTSA  
>  
>  
>  
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(For Mr. Smith and Mr. Grundler)

-NHTSA has always regulated fuel economy. Since you're both on the stage here together, tell me: how have the EPA and NHTSA managed to cooperate on this program?

(For Mr. Sugimoto)

-How will Honda be able to comply? How close can you get to 54.5 mpg with internal-combustion engines?

(For Mr. Bainwol)

-Mitch, with so many big car companies among your members, you work with a big cross-section of the industry. Are they all on board for 2017 to 2025?

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(For Mr. Grundler/Ayala/Smith)

-What do we mean by collaboration--joint development of data to support what could be different decisions by different organizations, or joint development of decisions as well?

-Who should collaborate on safety issues? Who should collaborate on fuel economy/GHG issues? Who represents the public interest?

### CONNECTED CARS

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-We've been hearing that any day now, NHTSA could be announcing its strategy for getting connected cars on the road. Where do you stand?

(For everyone)

-Everyone seems to agree that technology could provide huge safety benefits. How can the government and industry collaborate to bring us to that future, without stifling innovation?

(For Mr. Bainwol)

In addition to being a lobbying group, the Alliance does a lot of polling of consumers. What have you learned about what they want out of technologies like this one?)

(For Mr. Sugimoto)

-We're focusing on the progress of V2V in the United States, but of course, it is also moving forward in Europe and Japan. How has V2V developed in Japan? Do you think that Japan and the United States will use the same strategy, or will there be major differences?

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(For Mr. Grundler and Mr. Ayala)

-How have California, the EPA and the industry worked together to align emissions standards?

-Automakers like to sell 50-state vehicles, rather than building different cars for California and the states that follow its standards. How close will this allow them to get?

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(For Mr. Bainwol, Mr. Sugimoto)

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ZEV sets a goal of 15 percent of the light-duty fleet in the ZEV states being zero-emission vehicles by 2025. From your review for the fuel economy standards, do you think that's doable?

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(For Mr. Smith)

-In what areas is NHTSA currently collaborating with the auto industry, and what are the most important areas for future collaboration in NHTSA's view?

(For Mr. Sugimoto)

-There's a long history in Japan of having the auto industry and the government collaborate on standards – for instance, on pedestrian protection. How does that relationship work in Japan? And how is it different from the relationship in the United States?

(For Mr. Bainwol)

-Mitch, you just attended the Consumer Electronics Show in Las Vegas, which is looking more like an auto show every year. What were your takeaways? At a time when automakers and the government are grappling with distracted driving, did you see a lot of technology that might distract people?

(For the group, but primarily Mr. Smith, Bainwol, Sugimoto)

-While at the Detroit auto show last week, I was struck by the variety we're seeing in crash avoidance systems, like automatic braking. Subaru has EyeSight. Volvo has City Safety. Honda has City-Brake. They all have different names. They all work a little differently. There are no industrywide ratings for what protection they provide. Is this confusing for drivers? Is it time for an industry standard?

**To:** [Ex. 6]  
**From:** Grundler, Christopher  
**Sent:** Tue 1/21/2014 3:15:37 PM  
**Subject:** Fw: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions  
SAE-Questions-1222014.docx

---

From: Hengst, Benjamin  
Sent: Tuesday, January 21, 2014 9:57:56 AM  
To: Grundler, Christopher; Simon, Karl  
Cc: Mylan, Christopher  
Subject: Fw: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions

Chris we will get you draft responses on these, but it is worth your reviewing the questions when you can.  
Ben

---

From: Gabriel Nelson <gnelson@crain.com>  
Sent: Tuesday, January 21, 2014 8:53:08 AM  
To: [Ex. 7]@ARB; Melissa Jena; Bill Craven (william.craven@daimler.com)  
Cc: alund@ihs.org; daniel.smith@dot.gov; Gloria Bergquist; douglas\_longhitano@ahm.honda.com; Grundler, Christopher; Hengst, Benjamin; hideki\_suzuki@ahm.honda.com; mbainwol@autoalliance.org; Marc LeDuc; [Ex. 7]@ARB; Simon, Karl; Stephen.Ridella@dot.gov; Stewart, Gwen; Tanman, Arman; Tim Mellon; Wade Newton; Will Otero (wotero@autoalliance.org)  
Subject: RE: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions

Alberto,  
Thanks for the heads up. Here's hoping that our snowfall isn't too severe and that you're able to make it here without incident.

I've attached a document that compiles my tweaked versions of the questions I have received, and some of my own. It's not exhaustive, but I wanted to give you a chance to review and make any last-minute additions.

Gabe

---

From: [Ex. 7]@arb.ca.gov>  
Sent: Monday, January 20, 2014 11:20 PM  
To: Melissa Jena; Gabriel Nelson; Bill Craven (william.craven@daimler.com)  
Cc: alund@ihs.org; daniel.smith@dot.gov; Gloria Bergquist; douglas\_longhitano@ahm.honda.com; grundler.christopher@epa.gov; Hengst, Benjamin; hideki\_suzuki@ahm.honda.com; mbainwol@autoalliance.org; Marc LeDuc; [Ex. 7]@ARB; Karl Simon (simon.karl@epa.gov); Stephen.Ridella@dot.gov; Stewart, Gwen; Tanman, Arman; Tim Mellon; Wade Newton; Will Otero (wotero@autoalliance.org)  
Subject: Re: SAE Government/Industry Plenary Session conference call - follow up deadlines/actions

Melissa/Gabe/Bill,  
Bad news. I just got word from the airline that my flight was cancelled. They will try to re-book me so that alternative will determine whether I'll make it since I was only planning a one day trip to DC. Will keep you posted. thanks.

**Ex. 7**

**Ex. 7**

California Air Resources Board

**Ex. 7**

> On Jan 19, 2014, at 11:56 AM, "douglas\_longhitano@ahm.honda.com"  
<douglas\_longhitano@ahm.honda.com> wrote:  
>  
> Hello Gabe,  
>  
> Sorry you will be working on the holiday, but hopefully you are not working  
> on the weekend. Here are a few questions which I am submitting on behalf  
> of Mr. Sugimoto. I have included some context, but feel free to shape  
> these however you like.  
>  
> To Sugimoto-san  
> The development of regulations for automotive safety is not unique to  
> the United States. In Japan there is a long history of the auto  
> manufacturers, JAMA, working closely with the government, MLIT, to  
> develop effective regulations. Given your long history in the area  
> of crashworthiness and pedestrian protection, can you help us to  
> understand how collaboration was key to creation of some vehicle  
> safety requirement like pedestrian protection?  
> A big issue in the US today is Vehicle-to-Vehicle communications.  
> With so much focus recently on things like the Ann Arbor Safety Pilot  
> and DSRC spectrum sharing we might have developed tunnel vision and  
> lost perspective on what is happening in the rest of the world. What  
> is the state of V2V in Japan and how might actions taken in the US  
> effective international manufacturers.  
>  
> To EPA & CARB  
> So many of the recent discussions on the topic of Automated vehicles  
> have focused on possible safety benefits, but it is also well  
> understood that these technologies can have significant environmental  
> benefits. Can you highlight what you see as some of the main the  
> environmental benefits and tell us how your agencies can promote  
> consumer acceptance of these technologies? Can you foresee things  
> like automated vehicle lanes (HOV lanes) or maybe tax credits like  
> are used to promote electric vehicles?  
>  
> Please let me know if you have any questions about the questions.  
>  
> Best regards,  
>  
> Doug Longhitano  
>  
> \_\_\_\_\_  
> Douglas Longhitano  
> Safety Research Manager  
> American Honda Motor Co., Inc.  
> 21001 State Route 739  
> Raymond, OH 43067  
> (937)309-9860  
> douglas\_longhitano@ahm.honda.com  
>  
>  
>



>  
>  
>  
> From: Gabriel Nelson <gnelson@crain.com>  
> To: Melissa Jena <mjena@sae.org>, "daniel.smith@dot.gov"  
> <daniel.smith@dot.gov>, [Ex. 7]@arb.ca.gov"  
> [Ex. 7]@arb.ca.gov>, [Ex. 7]@arb.ca.gov"  
> [Ex. 7]@arb.ca.gov>, "grundler.christopher@epa.gov"  
> <grundler.christopher@epa.gov>, "Karl Simon  
> (simon.karl@epa.gov)" <simon.karl@epa.gov>,  
> "mbainwol@autoalliance.org" <mbainwol@autoalliance.org>, Wade  
> Newton <wnewton@autoalliance.org>, "Stephen.Ridella@dot.gov"  
> <Stephen.Ridella@dot.gov>, "alund@iihs.org" <alund@iihs.org>,  
> Tim Mellon <tim@sae.org>, Marc LeDuc <mleduc@sae.org>,  
> "Stewart, Gwen" <Stewart.Gwen@epa.gov>, "Gloria Bergquist"  
> <GBERGQUIST@autoalliance.org>, "Will Otero  
> (wotero@autoalliance.org)" <wotero@autoalliance.org>,  
> "douglas\_longhitano@ahm.honda.com"  
> <douglas\_longhitano@ahm.honda.com>,  
> "hideki\_suzuki@ahm.honda.com" <hideki\_suzuki@ahm.honda.com>,  
> "Tanman, Arman" <tanman.arman@epa.gov>, "Hengst, Benjamin"  
> <Hengst.Benjamin@epa.gov>,  
> Date: 01/17/2014 04:37 PM  
> Subject: RE: SAE Government/Industry Plenary Session conference call -  
> follow up deadlines/actions  
>  
>  
>  
> Hi everyone,  
> Just a reminder: if you'd like to provide questions that I should ask you  
> and other panelists during the plenary session, please provide them to me  
> ASAP. I plan to start compiling a master list on Monday. (Yes, it's a  
> holiday. I will be working.)  
>  
> Thank you,  
> ----  
>  
> Gabe Nelson  
> Reporter, Automotive News  
> (202) 662-7210  
> gnelson@crain.com  
> Crain Communications Inc., 529 14th St. NW #814, Washington, D.C., 20045  
> Beat: Government policy, Volkswagen and Audi  
> www.autonews.com  
>  
>  
>  
> From: Melissa Jena [mailto:mjena@sae.org]  
> Sent: Wednesday, January 08, 2014 11:50 AM  
> To: Gabriel Nelson; 'daniel.smith@dot.gov' [Ex. 7]@arb.ca.gov';  
> [Ex. 7]@arb.ca.gov'; 'grundler.christopher@epa.gov'; Karl Simon  
> (simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
> Stephen.Ridella@dot.gov; alund@iihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
> Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
> 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
> Arman; 'Hengst, Benjamin'

> Cc: Melissa Jena  
> Subject: SAE Government/Industry Plenary Session conference call - follow  
> up deadlines/actions  
>  
> As a follow up to our call this morning, please provide 1-2 questions that  
> you would like asked of yourself for the panel and an additional question  
> you would like to ask the other panelists. Please provide your questions /  
> requests no later than next Friday, January 17th to everyone on this email.  
> Gabe will provide everyone his refined list around January 20th. The  
> timetable for the event is attached.  
>  
> If you have any additional questions, please let me know. Thank you all  
> for your participation and we look forward to seeing everyone in 2 weeks.  
> Sincerely,  
>  
> \_\_\_\_\_  
> Melissa Jena  
> Project Manager  
>  
> SAE INTERNATIONAL  
> 400 Commonwealth Drive  
> Warrendale, PA 15096  
>  
> o +1.724.772.4008  
> m +1.724.612.3884  
> e mjena@sae.org  
> www.sae.org  
>  
>  
> \_\_\_\_\_  
> From: Melissa Jena  
> Sent: Wednesday, January 08, 2014 6:30 AM  
> To: 'Gabriel Nelson'; 'daniel.smith@dot.gov'; 'Ex. 7 @arb.ca.gov';  
> 'Ex. 7 @arb.ca.gov'; 'grundler.christopher@epa.gov'; Karl Simon (  
> simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
> Stephen.Ridella@dot.gov; alund@ihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
> Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
> 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
> Arman; 'Hengst, Benjamin'  
> Cc: Melissa Jena  
> Subject: SAE Government/Industry Plenary Session conference call - Jan 8;  
> 11:00 AM EDT  
>  
>  
> Just a reminder about the SAE Government/Industry plenary session prep  
> conference call today at 11:00 AM EDT. Call in details below with final  
> speaker line-up. Draft timetable for day of event attached. Hope to talk  
> with everyone or a member of your staff at 11:00 today.  
>  
> << File: Timetableplenary.doc >>  
>  
> \_\_\_\_\_  
> Melissa Jena  
> Project Manager  
>  
> SAE INTERNATIONAL

> 400 Commonwealth Drive  
 > Warrendale, PA 15096  
 >  
 > o +1.724.772.4008  
 > m +1.724.612.3884  
 > e mjena@sae.org  
 > www.sae.org  
 >  
 >  
 > -----Original Appointment-----  
 > From: Melissa Jena  
 > Sent: Monday, December 09, 2013 12:05 PM  
 > To: Melissa Jena; 'Gabriel Nelson'; 'daniel.smith@dot.gov';  
 > 'Ex. 7 @arb.ca.gov'; 'Ex. 7 @arb.ca.gov'; 'grundler.christopher@epa.gov';  
 > Karl Simon (simon.karl@epa.gov); 'mbainwol@autoalliance.org'; Wade Newton;  
 > Stephen.Ridella@dot.gov; alund@ihs.org; Tim Mellon; Marc LeDuc; 'Stewart,  
 > Gwen'; 'Gloria Bergquist'; Will Otero (wotero@autoalliance.org);  
 > 'douglas\_longhitano@ahm.honda.com'; hideki\_suzuki@ahm.honda.com; Tanman,  
 > Arman  
 > Cc: Hengst, Benjamin  
 > Subject: SAE Government/Industry Plenary Session conference call  
 > When: Wednesday, January 08, 2014 11:00 AM-12:00 PM (UTC-05:00) Eastern  
 > Time (US & Canada).  
 > Where: Conference call  
 >  
 >  
 > Resending with call in numbers.  
 >  
 > A brief conference call will be held on Wed, Jan 8 at 11:00 AM EST to  
 > discuss the SAE Plenary session panel at the Government/Industry Meeting.  
 > We hope that you or a member of your staff can participate. Details of the  
 > panel are below. If you have any questions, please let me know.  
 >  
 > Conference Call Dial In Number:  
 > **Ex. 6**  
 > Melissa Jena  
 > 724-772-4008  
 > mjena@sae.org  
 >  
 > Wednesday, January 22  
 > Plenary Session  
 > (Session Code: G502)  
 > Room 145 AB 3:00 p.m.  
 > This year's plenary session will focus on the theme of "Continuing  
 > Collaboration for the Protection of all Road Users and the Environment".  
 > Government and industry efforts to foster collaboration on all aspects of  
 > vehicle safety and environmental issues have made great progress, but there  
 > is much left to be done. Panelists will discuss the challenges in these  
 > areas that lay ahead and the opportunities as well as barriers that exist  
 > to identify and work on these issues together.  
 > Moderator - Gabe Nelson, Reporter, Automotive News  
 > Panelists -  
 > Alberto Ayala, Deputy Executive Officer, California Air Resources Board  
 > Mitch Bainwol, CEO, Alliance of Automobile Manufacturers Inc.

> Tomiji Sugimoto, Executive General Manager, Honda Motor Co., Ltd.  
> Christopher Grundler, Director - Transportation and Air Quality, U.S. EPA  
> Daniel Smith, Senior Associate Administrator for Vehicle Safety, NHTSA  
>  
>  
>  
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> unless a specific statement to the contrary is included in this message.  
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> computer.

## QUESTIONS FOR SAE PLENARY SESSION, 1/22/2014

Note: This list is not exhaustive. I will tweak some of the questions and add more -- though I will try to stick to the following topics, to keep it somewhat focused.

- Connected cars
- Fuel economy
- LEV III/Tier 3
- Zero-Emission Vehicles
- Crashworthiness/crash avoidance/automation

### FUEL ECONOMY

-For a program as big as the One National Program, it obviously took a lot of collaboration to get everyone on board with the fuel economy standards. (For each of the panelists) Why were so many stakeholders able to agree on that? And, from what you've seen so far, do you think everyone will stay on board during the midterm review?

(For Mr. Smith and Mr. Grundler)

-NHTSA has always regulated fuel economy. Since you're both on the stage here together, tell me: how have the EPA and NHTSA managed to cooperate on this program?

(For Mr. Sugimoto)

-How will Honda be able to comply? How close can you get to 54.5 mpg with internal-combustion engines?

(For Mr. Bainwol)

-Mitch, with so many big car companies among your members, you work with a big cross-section of the industry. Are they all on board for 2017 to 2025?

(For Mr. Ayala)

-California has a special authority under the Clean Air Act, and if you feel that the fuel economy standards are getting watered down, you don't legally have to stick to the standards set by EPA and NHTSA. You could do your own thing. If you don't like how the midterm review is going, would you ever do that?

(For Mr. Grundler/Ayala/Smith)

-What do we mean by collaboration--joint development of data to support what could be different decisions by different organizations, or joint development of decisions as well?

-Who should collaborate on safety issues? Who should collaborate on fuel economy/GHG issues? Who represents the public interest?

### CONNECTED CARS

(For Mr. Smith)

-We've been hearing that any day now, NHTSA could be announcing its strategy for getting connected cars on the road. Where do you stand?

(For everyone)

-Everyone seems to agree that technology could provide huge safety benefits. How can the government and industry collaborate to bring us to that future, without stifling innovation?

(For Mr. Bainwol)

In addition to being a lobbying group, the Alliance does a lot of polling of consumers. What have you learned about what they want out of technologies like this one?)

(For Mr. Sugimoto)

-We're focusing on the progress of V2V in the United States, but of course, it is also moving forward in Europe and Japan. How has V2V developed in Japan? Do you think that Japan and the United States will use the same strategy, or will there be major differences?

(For Mr. Grundler/Mr. Ayala)

-A lot of people have suggested that connected and autonomous cars could have big environmental benefits. Do you see that? Can you envision policies to promote them, like special lanes devoted to automated vehicles, or tax credits like the ones for electric vehicles?

### LEV III/TIER 3

(For Mr. Grundler and Mr. Ayala)

-How have California, the EPA and the industry worked together to align emissions standards?

-Automakers like to sell 50-state vehicles, rather than building different cars for California and the states that follow its standards. How close will this allow them to get?

### ZERO-EMISSION VEHICLES

(For Mr. Ayala)

California and the EPA have come a long way in aligning their fuel economy and tailpipe emissions standards. But there's one big difference: zero-emission vehicles. California rules will require car companies to sell EVs or fuel cell vehicles, and EPA rules will not. Why does that difference exist?

(For Mr. Ayala)

Your boss, Mary Nichols, told reporters the following last fall: "We can't force people to buy cars. There's no advantage to doing that. Our goal is to work with the auto companies." How are you working with them? And how are you going to make sure you have the infrastructure needed to sell EVs and FCEVs?

(For Mr. Bainwol, Mr. Sugimoto)

With the ZEV rules on the books, what is the path forward for the automakers? Mr. Sugimoto, I have driven your Fit EV, and it's a very nice car, but you do not lease very many of them. How are you going to comply?

(For Mr. Grundler)

ZEV sets a goal of 15 percent of the light-duty fleet in the ZEV states being zero-emission vehicles by 2025. From your review for the fuel economy standards, do you think that's doable?

#### CRASHWORTHINESS/CRASH AVOIDANCE

(For Mr. Smith)

-In what areas is NHTSA currently collaborating with the auto industry, and what are the most important areas for future collaboration in NHTSA's view?

(For Mr. Sugimoto)

-There's a long history in Japan of having the auto industry and the government collaborate on standards – for instance, on pedestrian protection. How does that relationship work in Japan? And how is it different from the relationship in the United States?

(For Mr. Bainwol)





-Mitch, you just attended the Consumer Electronics Show in Las Vegas, which is looking more like an auto show every year. What were your takeaways? At a time when automakers and the government are grappling with distracted driving, did you see a lot of technology that might distract people?

(For the group, but primarily Mr. Smith, Bainwol, Sugimoto)

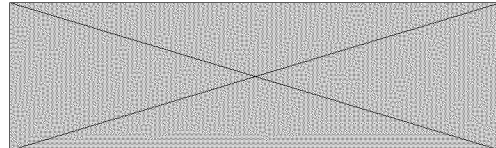
-While at the Detroit auto show last week, I was struck by the variety we're seeing in crash avoidance systems, like automatic braking. Subaru has EyeSight. Volvo has City Safety. Honda has City-Brake. They all have different names. They all work a little differently. There are no industrywide ratings for what protection they provide. Is this confusing for drivers? Is it time for an industry standard?

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 1/21/2014 8:18:22 PM  
**Subject:** P.M. NEWSCAST: Chrysler officially a Fiat subsidiary | F-150 repair dilemma | VW, Audi tease Super Bowl ads

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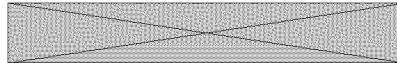
**January 21, 2014**



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**[F-150 repair dilemma »](#)**

**[Peek at VW, Audi ads »](#)**



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..



**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Cook, Leila  
**Sent:** Tue 1/21/2014 10:31:05 PM  
**Subject:** Your questions answered re funding the CAFCP

Chris –

You had asked for a bit more info about less costly versions of membership to jog your memory before making a decision whether to fund the CAFCP again this year. As a gentle reminder we are running late in executing the paperwork for CY 2014 already so a decision sooner is better than later.

There are two options for EPA 1) Full Member (\$87,500) and 2) Affiliate Member (\$3,300). [Associate Membership is for industry reps only.] The basic differences are Full Membership gives EPA an official seat at the table for the Executive Board and all working groups, direct engagement with all the partners, access to all CaFCP documents and reports as they are being developed, and CaFCP staff can help with the development of collaborative products, as per our contract with them (we are looking for ways to take more advantage of this). Full Members also receive higher visibility in outreach.

Affiliate Membership is designed for NGO participation. Affiliate members may participate in Executive Board meetings as members of the public but are not part of the CaFCP decision making process. Affiliate members are expected to actively participate in CaFCP project teams.

LA list of current members in each category follows. Please let me know if this information is sufficient for a decision on funding. The paperwork can be readied quickly as we have all inputs.

Lee

Current Full Members - Government:

State of CA Air Resources Board

State of CA Energy Commission

South Coast AQMD

US. DOE

US DOT

US EPA

Current Full Member - Industry:

Automotive Fuel Cell Coop.

Chrysler

Mercedes Benz/Daimler

General Motors

Honda R&D

Hyundai

Nissan

Toyota Motor

Volkswagen

Current Affiliate Members:

Affiliate Members:

Ac Transit

Bay Area Air Quality Management District

CA Dept of Food & Agriculture

CA State University, Los Angeles

CALSTART

Center for Energy Efficiency and Renewable Technologies (CEERT)

Center for Transportation and the Environment (CTE)

Energy Independence Now (EIN)

Nat'l Renewable Energy Lab (NREL)

Sandia Nat's Laboratories

Sunline Transit Agency

UC Berkeley

UC Irvine – Nat'l Fuel Cell Research Center

University of CA, Davis

**To:** Kata, Leonard (EEO)[Leonard.Kata@vw.com]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Snyder, Jim  
**Sent:** Wed 1/22/2014 10:46:18 PM  
**Subject:** RE: **Ex. 4 - CBI**

Well Len after our discussion today, I went back and confirmed **Ex. 4 - CBI**  
**Ex. 4 - CBI** My interpretation of 86.1807-01 was that 86.1807-01 (a)(3)(vi) requires “exhaust emissions standards” or “...in lieu of this requirement, manufacturers may use the standardized test group name designated by EPA.” I took “standardized test group name” to mean “Tier2BinX” but that may be interpreted differently.

Regardless, page 2 of Guidance CISC-06-19 (attached) says

“...Although the changes to §86.1807-01 do not require explicit display of standards, e.g. identifying a light-duty truck as a Tier 2 Bin 5 LDT3, EPA encourages manufacturers to display

such information on the label.” And Example 10 shows just “Tier 2” without a Bin #.

So **Ex. 4 - CBI**, are allowed but EPA *encourages* more detail.

**From:** Kata, Leonard (EEO) [mailto:Leonard.Kata@vw.com]  
**Sent:** Tuesday, January 21, 2014 9:15 AM  
**To:** Snyder, Jim  
**Cc:** Rodgers, William (EEO)  
**Subject:** **Ex. 4 - CBI**  
**Importance:** High

Hello Jim:

**Ex. 4 - CBI**

## **Ex. 4 - CBI**

WE need to get an early “okay” so that labels are available from our supplier in time for production.

# **Ex. 4 - CBI**

Best regards,

Len

---

**Leonard W. Kata**

Senior Manager

Emission Regulations and Certification

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone: (248) 754-4204

Cell: (248) 797-3886

E-Mail: [leonard.kata@vw.com](mailto:leonard.kata@vw.com)

Audi LOGO	<b>AUDI AG</b> <b>VEHICLE EMISSION CONTROL INFORMATION</b>		
Conforms to regulations:			2015 MY
<b>U.S. EPA:</b> <b>Tier 2</b> <b>LDV</b> OBD: CA II                      Fuel: Diesel  <b>California:</b> <b>ULEV125</b> <b>PG</b> OBD: CA II                      Fuel: Diesel			
No adjustments needed.	DFI/TC/CAC/WR-HO2S/ <b>OC/DPF+SCRC/SCRC/EGR/EGRC/NOXS</b>		
Group: FVGAV02.0VAL Evap: N/A	<b>8V0 010 504 ??</b>		

**To:** Henrietta.Dandy@dot.gov[Henrietta.Dandy@dot.gov]  
**Cc:** Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]; Harry.Thompson@dot.gov[Harry.Thompson@dot.gov]; james.tamm@dot.gov[james.tamm@dot.gov]; Ken.Katz@dot.gov[Ken.Katz@dot.gov]; Terry.Anderson@dot.gov[Terry.Anderson@dot.gov]; Alson, Jeff[alson.jeff@epa.gov]; Bunker, Amy[Bunker.Amy@epa.gov]; French, Roberts[french.roberts@epa.gov]; Good, David[good.david@epa.gov]; Hula, Aaron[Hula.Aaron@epa.gov]; Zaremski, Sara[zaremski.sara@epa.gov]; Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Ken.Katz@dot.gov  
**Sent:** Thur 1/23/2014 7:40:16 PM  
**Subject:** Re: Remaining 2012 CAFE datasets

Robert,

Thanks for the very detailed information about the remaining submissions. It's very appreciated.

I'm aware of the VW-Porsche issue and will talk with our Chief Counsel's office about it when I get back on the office to tomorrow.

Ken Katz

Sent from Ken's iPhone

On Jan 23, 2014, at 2:25 PM, "Dandy, Henrietta (NHTSA)"  
<Henrietta.Dandy@dot.gov<mailto:Henrietta.Dandy@dot.gov>> wrote:

Thanks for your immediate reply.

From: Peavyhouse, Robert [mailto:Peavyhouse.Robert@epa.gov]  
Sent: Thursday, January 23, 2014 2:15 PM  
To: Dandy, Henrietta (NHTSA); Thompson, Harry (NHTSA); Tamm, James (NHTSA); Katz, Ken (NHTSA); Anderson, Terry (NHTSA)  
Cc: Alson, Jeff; Bunker, Amy; French, Roberts; Good, David; Hula, Aaron; Zaremski, Sara; Wehrly, Linc  
Subject: Remaining 2012 CAFE datasets

Henrietta,

We cannot submit any of the 5 you mentioned. They are detailed below.

#### Toyota Passenger Vehicles

We have not been able to come to an agreement with Toyota on how to calculate the CAFE and GHG value for the Toyota Prius PHEV. Once we come to an agreement, it will take a week or two to get the programming implemented in our production database. Rob French has been working on getting this resolved. We thought there was a possibility to have an answer this week. Hasn't happened yet.

#### Fiat Passenger Vehicles

We need to combine Fiat (Maserati), Ferrari and Chrysler's CAFE data into 1 submission. It makes sense to combine the 2 smaller submissions into Chrysler's data. We have requested permission to give the Fiat and Ferrari data to Chrysler. We have received permission from Fiat, but Ferrari's VP/General Counsel has not given us this permission yet. Chrysler's lawyers and Ferrari's lawyers are currently in discussion to allow it. Once we have this permission, it should take 2 to 3 days to get this done.

#### Honda Passenger Vehicles

EPA found 3 errors in the Honda submission. They have fixed 2 of them. Waiting on them to fix the third. We have exchanged emails with Honda this week regarding getting this done.



Volkswagen (Passenger Vehicles and Light Trucks)

Porsche might be combined with Volkswagen for 2012. NHTSA thinks they should be combined, VW thinks that they should not. The combining would eliminate several million dollars in CAFE fines and take a month or two (both very large data submissions). We pointed this out to NHTSA, and are still waiting on direction as to combine or not. Once we receive direction, we will proceed.

From: Henrietta.Dandy@dot.gov<mailto:Henrietta.Dandy@dot.gov> [mailto:Henrietta.Dandy@dot.gov]  
Sent: Thursday, January 23, 2014 1:35 PM  
To: Peavyhouse, Robert; Harry.Thompson@dot.gov<mailto:Harry.Thompson@dot.gov>;  
james.tamm@dot.gov<mailto:james.tamm@dot.gov>; Ken.Katz@dot.gov<mailto:Ken.Katz@dot.gov>;  
Terry.Anderson@dot.gov<mailto:Terry.Anderson@dot.gov>  
Cc: Alson, Jeff; Bunker, Amy; French, Roberts; Good, David; Hula, Aaron  
Subject: RE: EPA CAFE Letter & Calculation - 2012 Mitsubishi PV

NHTSA CAFE Division has not received 2012 EPA Final CAFE Reports for the following manufacturers:

Toyota Passenger Vehicles  
Fiat Passenger Vehicles  
Honda Passenger Vehicles  
Volkswagen Passenger Vehicles  
Volkswagen Light Trucks

If this reports are verified and completed, please forward them promptly.

Regards,

Henrietta L. Dandy  
U.S. Department of Transportation  
National Highway Traffic Safety Administration  
NVS-132/W43-456  
1200 New Jersey Avenue, Southeast  
Washington, DC 20590  
TEL: (202) 366-4802  
FAX: (202) 493-2990  
henrietta.dandy@dot.gov<mailto:henrietta.dandy@dot.gov>

From: Peavyhouse, Robert [mailto:Peavyhouse.Robert@epa.gov]  
Sent: Tuesday, January 07, 2014 11:43 AM  
To: Thompson, Harry (NHTSA); Dandy, Henrietta (NHTSA); Tamm, James (NHTSA); Katz, Ken (NHTSA); Anderson, Terry (NHTSA)  
Cc: Alson, Jeff; Bunker, Amy; French, Roberts; Good, David; Hula, Aaron  
Subject: EPA CAFE Letter & Calculation - 2012 Mitsubishi PV

This e-mail message contains a signed EPA letter, a Verify database query dataset, and a Corporate Average Fuel Economy (CAFE) calculation.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**To:** Good, David[good.david@epa.gov]  
**Cc:** Terry.Anderson@dot.gov[Terry.Anderson@dot.gov];  
Harry.Thompson@dot.gov[Harry.Thompson@dot.gov]; t.letkiewicz.ctr@dot.gov[t.letkiewicz.ctr@dot.gov]  
**From:** Maurice.Hicks@dot.gov  
**Sent:** Fri 1/24/2014 4:07:41 PM  
**Subject:** FW: Status of 2012 CAFE submissions

Hi Dave,

As follow-up, we were hoping you could share with us any additional updates on the status of the MY 2012 final report for Tesla. Please send me an email or give me a call (202-366-1708). Thanks.

Maurice

**From:** Wehrly, Linc [mailto:wehrly.linc@epa.gov]  
**Sent:** Friday, December 20, 2013 2:52 PM  
**To:** Harris, Claude (NHTSA)  
**Cc:** Tamm, James (NHTSA); Bunker, Byron; Zaremski, Sara; Good, David  
**Subject:** Status of 2012 CAFE submissions

Claude,

We have made a valiant effort to get all of the CAFE/GHG submissions complete and sent out to NHTSA by today (12/20/13). We have been mostly successful, but there are still some submissions that we will not be able to fully provide by today. The following is a status of those manufacturers that we still have some outstanding issues that need to be resolved.

**Volkswagen/Porsche:**

Per conversation between myself and Jim Tamm earlier this week, pending NHTSA decision on combining VW and Porsche, EPA will hold off on sending the VW data to NHTSA (Porsche data has already been sent).

**Fiat/Maserati/Chrysler/Ferrari:**

Pending work needed to combine Fiat/Maserati/Chrysler/Ferrari for CAFE purposes but separate Ferrari for GHG purposes. Light Truck fleet information was sent to NHTSA. Passenger Car fleet information may be sent to NHTSA by request in draft form until all necessary changes/updates are made.

**Honda:**

Light Truck fleet information was sent to NHTSA.

The Passenger Vehicle submission has several errors in it that EPA is working out with Honda. EPA found a large CAFE standard discrepancy between EPA calculated value and Honda's due to Honda mistakenly putting a vehicle into Verify as a Domestic vehicle when it should have been an Import vehicle. Honda is working on fixing this, and final data will be sent to NHTSA in January.

**Mitsubishi:**

Light Truck fleet information was sent to NHTSA.

The Passenger Vehicle submission has one error remaining. Passenger Car fleet information may be sent to NHTSA by request in draft form until all necessary changes/updates are made.

**Toyota:**

Light Truck fleet information was sent to NHTSA.

The Passenger Vehicle submission one error remaining in the PHEV Prius. Passenger Car fleet information may be sent to NHTSA by request in draft form until all necessary changes/updates are made.

We will be down to a skeleton crew the next two weeks, but Dave Good will be in the office December 23<sup>rd</sup> and 24<sup>th</sup>, so he will be able to address any questions you may have and provide you with drafts of the Fiat/Maserati/Chrysler/Ferrari, Mitsubishi and Toyota information if you desire. We fully plan to have these few remaining issues resolved and all information submitted to NHTSA by early January.

Hope you all have a Happy Holidays!

Regards,

Linc

Linc Wehrly

Director, Light-Duty Vehicle Center

Compliance Division

Office of Transportation and Air Quality

United States Environmental Protection Agency

(734) 214-4286

[wehrly.linc@epa.gov](mailto:wehrly.linc@epa.gov)

**To:** Good, David[good.david@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Thomas, Richard (EEO)  
**Sent:** Fri 1/24/2014 4:41:21 PM  
**Subject:** 2015 Audi Fuel Economy Labels

Hi Dave;

To summarize our phone discussion I have the following. The release dates for index #005 (A3 Cabriolet quattro) and #006 (A3 Cabriolet) have been changed to May 12, 2014 and therefore please see that they are removed from the on-line guide.

The interior volume for the A3 quattro index #004 was listed as two door and should be four door. We will make the changes to Verify and reprocess the label index. You agreed to change it before you send 2015 labels to Washington today.

We are working with the help desk to change the full name for the division Audi, from Audi AG to just Audi.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Charmley, William[charmley.william@epa.gov]; Alson, Jeff[alson.jeff@epa.gov]; Snapp, Lisa[snapp.lisa@epa.gov]; Moran, Robin[moran.robin@epa.gov]; Lieske, Christopher[lieske.christopher@epa.gov]; Simon, Karl[Simon.Karl@epa.gov]; Grundler, Christopher[grundler.christopher@epa.gov]; Olechiw, Michael[olechiw.michael@epa.gov]; Helfand, Gloria[helfand.gloria@epa.gov]  
**From:** Nam, Ed  
**Sent:** Sat 1/25/2014 6:28:59 PM  
**Subject:** RE: Detroit News editorial - "More mpgs are good for the auto business", Doug Fox, President of Ann Arbor Automotive

# Non-Responsive

-Ed

**From:** Charmley, William  
**Sent:** Saturday, January 25, 2014 1:25 PM  
**To:** Alson, Jeff; Snapp, Lisa; Moran, Robin; Lieske, Christopher; Simon, Karl; Grundler, Christopher; Nam, Ed; Olechiw, Michael; Helfand, Gloria  
**Subject:** Detroit News editorial - "More mpgs are good for the auto business", Doug Fox, President of Ann Arbor Automotive

---

**From:** charmley[Ex. 6 - Personal Privacy]@sbcglobal.net>  
**Sent:** Saturday, January 25, 2014 12:49:16 PM  
**To:** Charmley, William  
**Subject:** Detroit News editorial - "More mpgs are good for the auto business", Doug Fox, President of Ann Arbor Automotive

Dear all -

Here is an editorial from the Detroit News written by Doug Fox, the President of Ann Arbor Automotive, a dealership that includes Ann Arbor Acura, Ann Arbor Hyundai, Ann Arbor Mitsubishi, Ann Arbor Nissan, and Kia of Ann Arbor.

Pr

Robin and Chris - didn't this person come and testify at either the 2012-2016 or the 2017-2025 LD GHG rulemaking public hearing in Detroit in support of the standards? My recollection is that the folks from Hyundai asked some of the Michigan dealerships if they would testify, and this person wanted to do it. I remember this was very helpful, in light of the negative comments coming from NADA.

Also, Robin, I know it is still on your action list, but let's not forget sometime this year to reach out to the American International Automobile Dealers Association (AIADA). I know we both think this could be helpful in light of the approach NADA has taken in the past. It would be good to know if not all dealerships are of the same mind when it comes to the 2017-2025 standards.

thanks

Bill

=====

January 23, 2014 at 1:00 am

## **THE AUTO SHOW**

### **More mpgs are good for the auto business**

Doug Fox

Vehicles that go farther on a gallon of gas — or that don't need gas at all — are turning heads at this year's North American International Auto Show in Detroit. There are new all-electric cars from BMW and Volkswagen, a redesigned Ford F-150 pickup that weighs 700 pounds less than

last year and new fuel cell models from Honda.

But high-tech, fuel-efficient rides are not just for show. On dealers' lots across the country — including ours at Ann Arbor Automotive — Americans are choosing from an increasing number of electric vehicles, hybrids, and fuel-efficient conventional cars. The era of the gas-guzzler is drawing to a close.

Among the factors driving this trend are the national fuel-economy standards that have all automakers shooting for an average of 54.5 miles per gallon by 2025. I believe the national push for fuel efficiency is good for business. Not only are fuel-economy rules saving motorists money at the gas station, they are sparking innovation at car company headquarters around the world — and they are helping us sell more cars.

My customers want vehicles that fit their needs — whether they're in the market for a starter car, a family sedan, an SUV or a pickup — and they also want fuel efficiency. And car manufacturers, spurred by a mixture of consumer demand and government goals for fuel efficiency, are doing their best to oblige.

At the leading edge, there are cars moving beyond gasoline, like the all-electric Nissan Leaf — a car we sell, and one I drive. Nissan saw a whopping 130 percent increase in Leaf sales last year. Nissan moved production from Japan to Smyrna, Tenn., to save costs, and slashed the sticker price 18 percent. We've sold plenty. So many that at times it has been tough to keep up with demand.

Electric cars in general had a great year last year, with plug-in models' sales up more than 80 percent compared to 2012 — despite the fact that gasoline prices dropped. Compared to 2011, the first year plug-in electric were widely available, 2013 saw more than five times the number of electric vehicles sold. That's a faster rate of growth than we saw when hybrid cars were introduced. And with 16 plug-in models available, and more on the drawing board, the number of electric cars sold seems likely to keep growing.

Among conventional, gas-powered vehicles — even bigger vehicles, like SUVs and pickups — fuel efficiency is proving to be a selling point, as well. Ford, for example — which sells a lot of pickups — has improved its fleet's fuel efficiency by seven percent over the past three years. GM's fuel economy figures have improved by six percent.



It's no accident the average fuel economy of new vehicles reached a record 24.8 mpg in 2013. With consumer demand for high quality, fun and fuel-efficient cars, plus long-term national rules in place that let all car manufacturers know how fuel-efficient their vehicles have to be, that number will only keep rising. And so, I believe, will sales.





*Doug Fox is the president of Ann Arbor Automotive and was the chairman of the 2010 North American International Auto Show.*

From The Detroit News:

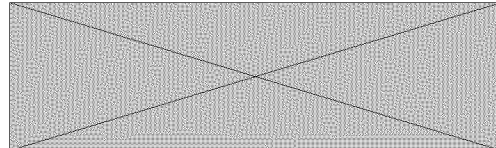
<http://www.detroitnews.com/article/20140123/OPINION01/301230008#ixzz2rQuJDHiW>

**To:** Bunker, Byron[bunker.byron@epa.gov]  
**From:** Automotive News  
**Sent:** Sat 1/25/2014 9:35:47 PM  
**Subject:** P.M. NEWSCAST FROM NADA: Industry's pulse strengthens | 16.4 million sales, higher transaction prices | VW's U.S. sales chief leaving | NADA by the numbers

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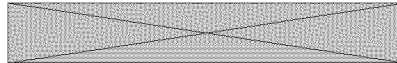
**January 25, 2014**



**Industry gaining strength »**

**VW sales chief leaving »**

**NADA by the numbers »**



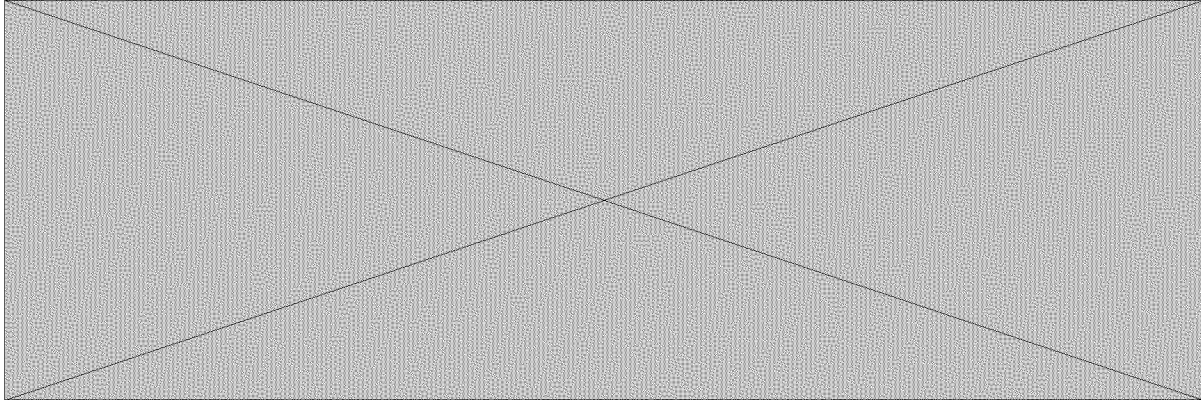
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Automotive News is located at 1155 Gratiot Ave., Detroit, Michigan, 48207

..

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Electri-city.mobi  
**Sent:** Mon 1/27/2014 12:27:20 PM  
**Subject:** 3rd EV Charge Point Symposium



**January 24th 2014**

[View in browser](#)

Isabelle Rivière, Founder of EV Charge Point Symposium, President of AVEM

Want to learn more about the progress of the future European Directive on charging infrastructure ? Discover European " success stories " of deployment?  
Extend your network.

Come and be a part of it all on the French Riviera (Nice) Wednesday 5th and Thursday 6th of February 2014 for two days of bilingual conferences on French and European deployment of charging stations.

For members or partners of the EEVC conference, get a 20% discount when registering using the code **ASSISESEEV**

Registration has officially started.

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[Download the program](#)

## FACING THE MEDITERRANEAN

Facing the Mediterranean, halfway between Nice Côte d'Azur International Airport and the pedestrian city center, the Mediterranean University Center (CUM) will be hosting 3rd IRVE Symposium

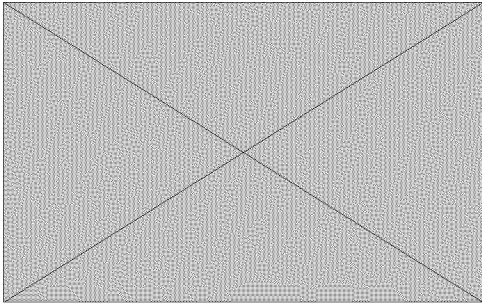
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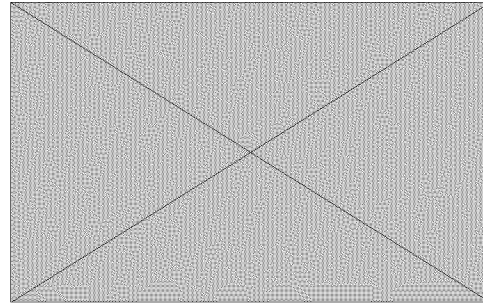
Keynote speaker at the EV Charge Point Symposium, convinced by the

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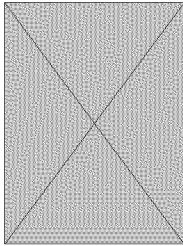


french event, they are now supporting us as a sponsor.



Solutions, new partner of the 3rd IRVE Symposium brings an exclusive testimony on the "Source London" network.

## ATTENDEES



**Laure Chapuis**

Cabinet Member of the EU  
Transport Commissioner Siim  
Kallas

**European Commission**

**Christian Estrosi**

President

**Nice Côte d'Azur City**

**Minister Alan Kelly**

Minister of State, at the  
Department of Transport, Tourism  
& Sport

**Republic of Ireland**

**S.E Bernard Fautrier**

Minister Plenipotentiary, Official Representative of  
the Minister of State

**Principality of Monaco**

**Beatrice Foucher-Sybord**

Program Director Electric Vehicle

**Renault**

**Waldemar Schweigert**

Director Fleet Car Management & Electric car sharing

**Volkswagen**

**Andreas Pfeiffer**

CEO

**Hubject**

**Bruno Lebrun**

President

**GIREVE**

[Our speakers list](#)

[DATES & LOCATION](#)

Mediterranean University Center (CUM)  
65, Promenade des Anglais  
06000 NICE - FRANCE

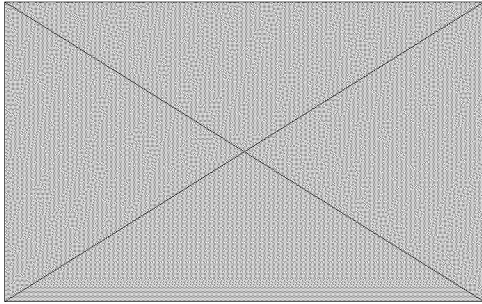
Wednesday 5th February 2014 :  
Plenary session : 14h00 - 18h00  
Workshops : 18h10 - 19h30  
Cocktail dinner : 20h15 - 22h30

Thursday 6th February 2014  
Plenary session : 08h30 - 16h30

[Register](#)

[Download the program](#)

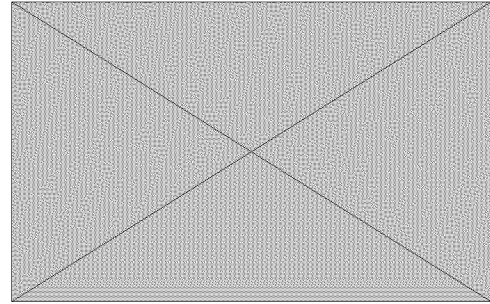
## GENERAL INFORMATION



### Accommodation

See our hotel selection, less than ten minutes walk from the event.

[Our hotel selection](#)



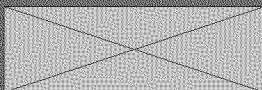
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Contact us

Our website

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Allen, Gregory[Gregory.Allen@vw.com]; Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Giles, Michael (EEO)  
**Sent:** Mon 1/27/2014 4:14:23 PM  
**Subject:** VW Group - Audi A8 / A8L Decision Information Submitted

Hello Jim,

I just submitted two decision information requests XML to VERIFY for the two vehicle configurations described below.

Test Group: FVGAV04.0NUA

Vehicle ID: FNUA-DAQ

Configuration 0: Audi A8 (FEDV)

Configuration 1: Audi A8L (FEDV)

Note 1: These are both FEDV's.

Note 2: Both configurations have start/ stop. Therefore, there is an extra FTP and US06 test for each configuration.

Note 3: These vehicles will be in a carryover test group (from MY14 FADXV04.03UJ).

Note 4: Both configurations had high FE for the FTP and Hwy tests and will require Mfr. confirmatory testing if waived.

Please advise of the decision at your earliest convenience.

Regards,

Michael Giles

Certification Engineer – EEO

VW Group of America

(248) 754-4229



# Non-Responsive

**From:** james.tamm@dot.gov [mailto:james.tamm@dot.gov]

**Sent:** Thursday, January 23, 2014 10:54 PM

**To:** Ken.Katz@dot.gov

**Cc:** Peavyhouse, Robert; Harry.Thompson@dot.gov; Terry.Anderson@dot.gov; Alson, Jeff; Bunker, Amy; French, Roberts; Good, David; Hula, Aaron; Zaremski, Sara; Wehrly, Linc; rebecca.yoon@dot.gov; gregory.powell@dot.gov; Maurice.Hicks@dot.gov

**Subject:** Deliberative: RE: Remaining 2012 CAFE datasets

Bob,

Thanks for the information.

# Non-Responsive

Jim

**From:** Katz, Ken (NHTSA)  
**Sent:** Thursday, January 23, 2014 2:40 PM  
**To:** Dandy, Henrietta (NHTSA)  
**Cc:** Peavyhouse, Robert; Thompson, Harry (NHTSA); Tamm, James (NHTSA); Katz, Ken (NHTSA); Anderson, Terry (NHTSA); Alson, Jeff; Bunker, Amy; French, Roberts; Good, David; Hula, Aaron; Zaremski, Sara; Wehrly, Linc  
**Subject:** Re: Remaining 2012 CAFE datasets

Robert,

Thanks for the very detailed information about the remaining submissions. It's very appreciated.

I'm aware of the VW-Porsche issue and will talk with our Chief Counsel's office about it when I get back on the office to tomorrow.

Ken Katz

Sent from Ken's iPhone

On Jan 23, 2014, at 2:25 PM, "Dandy, Henrietta (NHTSA)" <[Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov)> wrote:

Thanks for your immediate reply.

**From:** Peavyhouse, Robert [<mailto:Peavyhouse.Robert@epa.gov>]

**Sent:** Thursday, January 23, 2014 2:15 PM

**To:** Dandy, Henrietta (NHTSA); Thompson, Harry (NHTSA); Tamm, James (NHTSA); Katz, Ken (NHTSA); Anderson, Terry (NHTSA)

**Cc:** Alson, Jeff; Bunker, Amy; French, Roberts; Good, David; Hula, Aaron; Zaremski, Sara; Wehrly, Linc

**Subject:** Remaining 2012 CAFE datasets

Henrietta,

We cannot submit any of the ☐ you mentioned. They are detailed below.

**Non-Responsive**

# Non-Responsive

## Volkswagen (Passenger Vehicles and Light Trucks)

Porsche might be combined with Volkswagen for 2012. NHTSA thinks they should be combined, VW thinks that they should not. The combining would eliminate several million dollars in CAFE fines and take a month or two (both very large data submissions). We pointed this out to NHTSA, and are still waiting on direction as to combine or not. Once we receive direction, we will proceed.

**From:** [Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov) [mailto:[Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov)]

**Sent:** Thursday, January 23, 2014 1:35 PM

**To:** Peavyhouse, Robert; [Harry.Thompson@dot.gov](mailto:Harry.Thompson@dot.gov); [james.tamm@dot.gov](mailto:james.tamm@dot.gov); [Ken.Katz@dot.gov](mailto:Ken.Katz@dot.gov); [Terry.Anderson@dot.gov](mailto:Terry.Anderson@dot.gov)

**Cc:** Alson, Jeff; Bunker, Amy; French, Roberts; Good, David; Hula, Aaron

**Subject:** RE: EPA CAFE Letter & Calculation - 2012 Mitsubishi PV

NHTSA CAFE Division has not received 2012 EPA Final CAFE Reports for the following manufacturers:

## Non-Responsive

Volkswagen Passenger Vehicles

Volkswagen Light Trucks

If this reports are verified and completed, please forward them promptly.

Regards,

Henrietta L. Dandy

U.S. Department of Transportation

National Highway Traffic Safety Administration

NVS-132/W43-456

1200 New Jersey Avenue, Southeast

Washington, DC 20590

TEL: (202) 366-4802

FAX: (202) 493-2990

[henrietta.dandy@dot.gov](mailto:henrietta.dandy@dot.gov)

# Non-Responsive

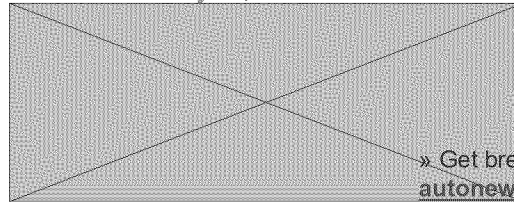
Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 1/27/2014 10:01:42 PM  
**Subject:** DAILY: Hillary Clinton gets warm dealer embrace, hails GM's Barra | Marchionne weighs political, tax gains with Fiat shift | Ford aims for 'Super' jump on GM, rivals | Why Honda's 'pretty great' image of Detroit was so weird

Today's most read story

**Gilles: Viper has 'never tried to be Corvette'**

January 27, 2014



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## TOP NEWS

### **Clinton greeted warmly by dealers, hails GM's Barra**

1:32 pm U.S. ET | Jan 27

Hillary Clinton, whose choice as NADA keynote speaker caused such controversy, was warmly received by dealers this morning as she gave an hour-long speech to a near-packed house at the Morial Convention Center. ... » [READ](#)

## **NEWS ANALYSIS**

### **For Marchionne, shift in Fiat headquarters risks political pain for tax gain**

3:53 pm U.S. ET | Jan 27

Fiat boss Sergio Marchionne, the veteran dealmaker who has just wrested full control of Chrysler Group from its union retirees, is about to unveil his next trick: moving the group's 115-year-old headquarters out of Italy. ... » [READ](#)

Automotive News NADA show dailies  
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## **Barra: GM sticking to product plans to revive Opel profits**

8:09 am U.S. ET | Jan 27

GM's new CEO, Mary Barra, is sticking to plans for its Opel unit to build an all-new model at a key plant in Germany as part of a \$5.5 billion product drive to restore European profits. ... » [READ](#)

## **Ford aims to get jump on GM, rivals on Super Bowl Sunday**

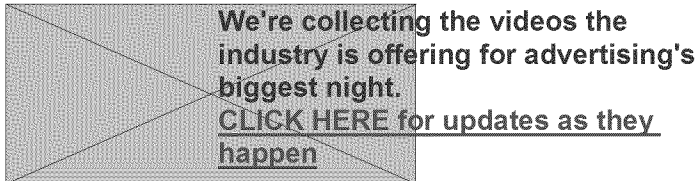
2:33 pm U.S. ET | Jan 27

Ford is aiming to get out ahead of rival automakers on Super Bowl Sunday with a spot featuring actor James Franco that will break after the coin toss but before the kickoff. ... » [READ](#)

## **Subaru dealers get financial aid to boost fixed-operations capacity**

8:37 am U.S. ET | Jan 27

Subaru dealers were given preliminary details of the brand's new program to increase fixed-operations capacity at its U.S. dealerships. ... » [READ](#)



### **ON THE BLOGS**

**NICK BUNKLEY**

**Why Honda's 'pretty great' image of Detroit was so weird**  
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**HANS GREIMEL**

**Asia flexes status as production powerhouse**  
» [READ](#)

**LUCA CIFERRI**

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LINDSAY CHAPPELL  
Why the sales process still wastes so much time  
» READ

#### **MOST READ (Last 7 days)**

- » Ford offers 20% discount on necessities to fix aluminum F-150**
- » Gilles: Viper has 'never tried to be Corvette'**
- » Ford dealers say truckers are ready for aluminum**
- » Chrysler adds 26 minority-owned stores**
- » Karma chameleons? Lutz company snaps up Fiskers**

#### **How to Find Good Engineers**

Are you struggling to hire the engineering talent you need to keep pace with your expanding business? You're not alone. Three out of four parts makers are having trouble finding engineers, the Original Equipment Suppliers

Association found in a survey last fall.

*Automotive News* will host a 30-minute webinar this Thursday to provide answers to the challenge. Get strategies for identifying talent and give tips for making your hiring bids successful - [sign up today!](#)

## **COLUMNS**

**KEITH CRAIN**

### **Technology takes a lot of training**

12:01 am U.S. ET | Jan 27

Today's automobile is packed with technology, more than most customers understand. As cars and trucks become more complicated, manufacturers and dealers are going to have to provide more training for customers. ... » [READ](#)

### **GABE NELSON: Automakers set to receive EPA anti-smog mandate**

12:01 am U.S. ET | Jan 27

### **Ford dealer improvement program tops expectations**

UPDATED: 1/26/14 12:09 pm ET - adds detail  
11:50 am U.S. ET | Jan 26

### **Chrysler adds 26 minority-owned stores**

1:01 pm U.S. ET | Jan 26

### **Tavares could take helm of Peugeot in March, report says**

9:17 am U.S. ET | Jan 25

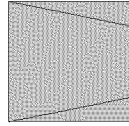
### **Hyundai dealers seek incentives to sell off 2013 models**

4:12 pm U.S. ET | Jan 27

### **VW's Horn hits reset button with U.S. dealers**

UPDATED: 1/26/14 8:06 pm ET - adds detail  
7:26 pm U.S. ET | Jan 26

### **Tesla completes L.A.-to-New York Model S charging network**



» [1/30 - Hiring Engineers](#)  
by Automotive News  
» [2/6 - The Road to the Sale](#) by MAX  
» [2/11 - Mobile Shoppers](#)  
by Cars.com

» [April 7, 2014 - PACE Awards](#)  
» [May 14 - Marketing Seminar - Los Angeles](#)  
» [June 3, 2014 - Rising Stars](#)  
» [June 4, 2014 - ANE Congress](#)

1:49 pm U.S. ET | Jan 26

**Tata Motors executive Karl Slym dies after Bangkok hotel fall**

UPDATED: 1/27/14 11:25 am ET - adds closing share price

9:19 am U.S. ET | Jan 26

**Geely, Volvo planning subcompact global car**

12:58 pm U.S. ET | Jan 27

**Volvo shifts marketing message and dollars**

10:31 pm U.S. ET | Jan 26

**GM execs tell dealers Chevy can gain U.S. share in pickups**

7:15 pm U.S. ET | Jan 26

**Lincoln's new product flow pleases dealers**

6:14 pm U.S. ET | Jan 26

**Ford asks dealers for help with launches**

5:32 pm U.S. ET | Jan 26

**VW parts ways with U.S. sales chief Trivieri**

UPDATED: 1/25/14 11:55 a.m. ET - adds age

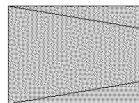
9:53 am U.S. ET | Jan 25

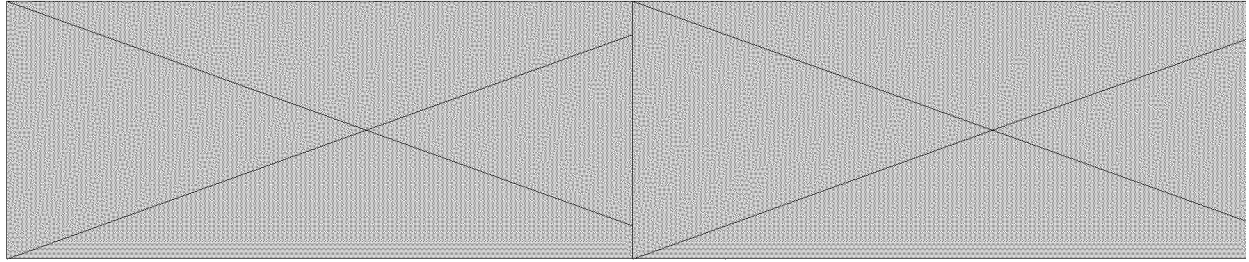
**Ford offers 20% discount on necessities to fix aluminum F-150**

6:11 pm U.S. ET | Jan 25

**Get ready for a flood of off-lease cars**

12:00 pm U.S. ET | Jan 25





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..

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Gabriel Nelson  
**Sent:** Tue 1/28/2014 12:07:40 AM  
**Subject:** RE: Great Job on your Tier 3 Story, Gabe!

Don't take that "only" as a criticism. :-)

I was glad to see that this article went online over the weekend at almost exactly the same time the rule went to OMB. I was prescient!

-----

**Gabe Nelson**

Reporter, *Automotive News*

(202) 662-7210

gnelson@crain.com

Crain Communications Inc., 529 14th St. NW #814, Washington, D.C., 20004

Beat: Government policy, Volkswagen and Audi

www.autonews.com

----- Original message -----

**From:** "Grunder, Christopher"  
**Date:** 01/27/2014 6:05 PM (GMT-06:00)  
**To:** Gabriel Nelson  
**Subject:** Re: Great Job on your Tier 3 Story, Gabe!

Only!? This is a big deal. Thanks for getting out in front. Also, finally catching up with others on cleaner fuel

---

**From:** Gabriel Nelson <gnelson@crain.com>  
**Sent:** Monday, January 27, 2014 7:03:59 PM  
**To:** Grunder, Christopher  
**Subject:** RE: Great Job on your Tier 3 Story, Gabe!

Thanks, Chris.

I think I understand. Fuel standards will be aligned, but tailpipe emissions standards would become stricter in the United States than in either Europe or Japan. I was under the impression they'd be pretty much the same... my mistake. I now realize they are only being aligned with California.

Gabe

-----

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Beat: Government policy, Volkswagen and Audi

www.autonews.com

----- Original message -----

From: "Grundler, Christopher"

Date: 01/27/2014 5:35 PM (GMT-06:00)

To: Gabriel Nelson

Subject: Great Job on your Tier 3 Story, Gabe!

Julia is going to send you a correction if you able to run it. Call me if you need an explanation

**To:** Gabriel Nelson[gnelson@crain.com]  
**From:** Grundler, Christopher  
**Sent:** Tue 1/28/2014 12:16:30 AM  
**Subject:** Re: Great Job on your Tier 3 Story, Gabe!

I didn't. Your timing is superb.

---

**From:** Gabriel Nelson <gnelson@crain.com>  
**Sent:** Monday, January 27, 2014 7:07:40 PM  
**To:** Grundler, Christopher  
**Subject:** RE: Great Job on your Tier 3 Story, Gabe!

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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Bruce M. Belzowski  
**Sent:** Tue 1/28/2014 6:13:28 AM  
**Subject:** UM Connected/Autonomous Vehicle Safety Conference (Feb. 12th): VW/Audi and MDOT Join GM and UMTRI Researchers to Discuss the Future Impact of Connected/Autonomous Vehicles on Safety

**University of Michigan**  
**Transportation Research Institute**  
  
**“Focus on the Future”**  
**Automotive Research Conferences**

***How Will Connected and Autonomous Vehicles  
Affect Automotive Safety?***

**Wednesday, February 12, 2014**  
**9am to 4:00pm**

**University of Michigan, The Michigan League, Michigan Ballroom (2<sup>nd</sup> Floor)**  
**911 North University Avenue, Ann Arbor, MI 48109-1265**

Our second vehicle safety conference examines the technology trajectory of connected and autonomous vehicles and how these technology advances will affect vehicle safety over the next 10 years. Manufacturers are implementing technology strategies that support improved safety today, such as adaptive cruise control, forward, side, and rear collision warning systems, and lane departure warning systems. These systems also

are required technologies in autonomous vehicles that will connect with other vehicles on the road, as well as local infrastructure, to protect vehicle occupants from collisions.

Some of the key questions we will address include: What are the technology evolutionary paths for these technologies? Are there key missing pieces in technology, infrastructure, or regulations that will hold back or accelerate connected/autonomous driving? What are the industry opportunities for manufacturers and suppliers in connected and autonomous vehicles? How does government see the evolution of connected and autonomous vehicles playing out? Finally, what opportunities do these technologies offer drivers in terms of safety and convenience, and when should we expect to see them.

To answer these questions we have invited manufacturers, suppliers, government, and academic speakers to address these issues, and we hope you can join us to add to the discussion.

### **The UM Alumni Discount**

**Alumni who sign up for five consecutive conferences**

**receive a \$250 discount**

Confirmed speakers include:

**Bruce Belzowski**, Automotive Analysis, University of Michigan Transportation Research Institute, will introduce the key issues and moderate the conference.

**John Capp**, Director, Electrical and Controls Systems Research and Active Safety Technology Strategy will discuss GM's evolutionary technology strategy related to safety systems.

**Prasanth Jeevan**, Research Engineer, Volkswagen/Audi Electronics Research Lab, will discuss his company's research on "piloted" vehicles (i.e. autonomous). We may ask him how Germany's Angela Merkel responded when he presented his group's work to her.

**Collin Castle**, Connected Vehicle Technical Manager, Michigan Department of Transportation, will talk about a number of connected vehicle initiatives on Michigan roads today that focus on safety, including work on weather data collection via MDOT vehicles.

**Andre Weimerskirch**, Associate Research Scientist, University of Michigan Transportation Research Institute, will provide his insight into the issue of automotive cyber security. As an expert on this issue, he will provide his insight into how auto companies around the world are addressing this key issue that affects the future of connected and autonomous driving.

**We are also inviting other manufacturers, suppliers, government researchers to join us to discuss the future of safety related to connected and autonomous vehicles.**

\*Please forward this email to appropriate people in your organization. Thank You.

## **Conference Sponsorship**

Companies or groups interested in sponsoring this conference, please contact Bruce Belzowski at [bbl@umich.edu](mailto:bbl@umich.edu) or 734-936-2704. Sponsorship Amount (Minimum \$2,500)

# **Connected and Autonomous Vehicle Safety Sponsor**

University of Michigan Office of the Vice President of Research

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### **Conference Fee:**

Registration: \$200

UMTRI-AAD Affiliates and UM Students, Faculty, and Staff: Free

### **4 Easy Ways to Register**

**Online.....** <http://umtri-proto.umtri.umich.edu/conference.php>

**Call.....**Bonnie Pond at 734-763-2466

**E-Mail:** [bmckie@umich.edu](mailto:bmckie@umich.edu)

**Mail.....** Your registration request to:

Focus on the Future Conferences

University of Michigan Transportation Research Institute

Automotive Analysis

2901 Baxter Road, Room 110A

Ann Arbor, MI 48109-2150

**Registration Request****University of Michigan Automotive Research Conference****February 12, 2014 – The Michigan League, 911 North University, Ann Arbor, MI****Registration Fee: \$200****UMTRI-AAD Affiliates and UM Students, Faculty, and Staff: Free**

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***Upcoming Events***

- **February 12, 2014 (Wednesday): *Automotive Safety: How Will Connected and Autonomous Vehicles Affect Automotive Safety?*** This conference is a follow-up to our 2011 Automotive Safety conference. Since that time, there has been major

technological progress in the areas of connected and autonomous vehicles. This conference will review what has happened to date, and what experts see for the next 5-10 years.

- **New Conference: April 16, 2014 (Wednesday): *Inside Russia: Understanding the Current and Future Russian Automotive Industry.*** Russia is the final BRIC market in our study of the globalization of the auto industry that is expected to be a growth market for automakers in the future. This conference will provide insight into how government, industry, and consumers view the current and future Russian automotive market.
- **July 23, 2014 (Wednesday): *Powertrain Strategies for the 21<sup>st</sup> Century.*** Our 6<sup>th</sup> annual conference that provides insight into how manufacturers and suppliers are managing their resources to meet the needs of consumer while meeting government requirements.

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Snyder, Jim  
**Sent:** Tue 1/28/2014 1:51:57 PM  
**Subject:** RE: Tire size on Audi FAPA-AAF

Thanks for clearing that up.

**From:** Rodgers, William (EEO) [mailto:William.Rodgers@vw.com]  
**Sent:** Tuesday, January 28, 2014 7:20 AM  
**To:** Snyder, Jim; Giles, Michael (EEO)  
**Subject:** RE: Tire size on Audi FAPA-AAF

Hi Jim,

The tire size on the car is correct and reflects the tire listed in the application. I have corrected the Supplemental Information where the error was found.

I have called and left a message with Ben Haynes also knowing he is in the office early.

Thanks,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**From:** Snyder, Jim [<mailto:Snyder.Jim@epa.gov>]  
**Sent:** Monday, January 27, 2014 5:37 PM  
**To:** Giles, Michael (EEO); Rodgers, William (EEO)  
**Subject:** FW: Tire size on Audi FAPA-AAF

Mike, Bill, does it have the correct tires and the data is wrong , or vice-versa?

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Haynes, Ben  
**Sent:** Monday, January 27, 2014 4:22 PM  
**To:** Snyder, Jim  
**Cc:** Spieth, John  
**Subject:** Tire size on Audi FAPA-AAF

Verify shown drive tire as 215/55R17 but what was on the vehicle was 225/45R17.

**Ben Haynes**

Technical Information Specialist

TATD/VTC

Supporting the USEPA through Cooperative Agreement  
under the SEE Program



Scheduling Office

734-214-4261

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Snyder, Jim  
**Sent:** Tue 1/28/2014 1:57:14 PM  
**Subject:** RE: Tire size on Audi FAPA-AAF

This vehicle does not have Start/Stop, correct?

**From:** Rodgers, William (EEO) [mailto:William.Rodgers@vw.com]  
**Sent:** Tuesday, January 28, 2014 7:20 AM  
**To:** Snyder, Jim; Giles, Michael (EEO)  
**Subject:** RE: Tire size on Audi FAPA-AAF

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734-214-4261

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Rodgers, William (EEO)  
**Sent:** Tue 1/28/2014 1:58:45 PM  
**Subject:** RE: Tire size on Audi FAPA-AAF

Correct no start/stop.

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**From:** Snyder, Jim [<mailto:Snyder.Jim@epa.gov>]  
**Sent:** Tuesday, January 28, 2014 8:57 AM  
**To:** Rodgers, William (EEO)  
**Subject:** RE: Tire size on Audi FAPA-AAF

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Technical Information Specialist

TATD/VTC

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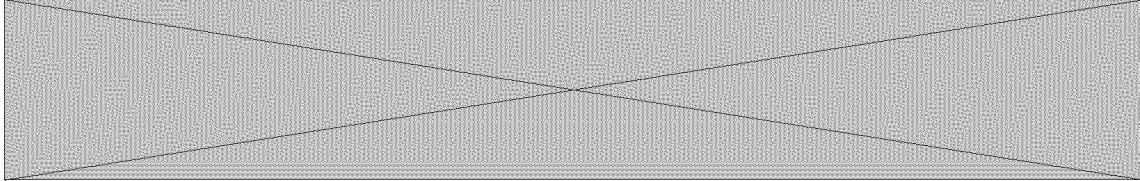
under the SEE Program

Scheduling Office

734-214-4261

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Tue 1/28/2014 5:04:25 PM  
**Subject:** Green Car Report Daily Headlines

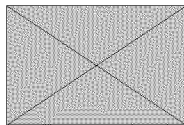
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The latest from your friends at GCR:

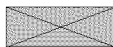
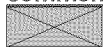
## Volkswagen Polo, Nissan ZEOD Race Engine, Chrysler Hybrids: Today's Car News

Jan 28, 2014 04:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



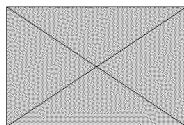
Today on Green Car Reports: the redesigned Volkswagen Polo subcompact launches in Europe, Nissan reveals the tiny engine for its ZEOD electric Le Mans racer, and the fate of Chrysler's hybrids. All this and more on Green Car Reports. Volkswagen launches a new, more efficient version of the Polo subcompact in Europe, but it's not coming to the U.S...

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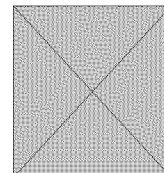
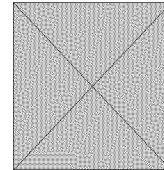
## VL Buying Leftover New Fisker Karmas To Yank Out Electric Parts

Jan 28, 2014 04:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



The idea of converting Fisker Karma range-extended electric luxury sedans into Corvette-powered V-8 hot rods is moving forward. VL Automotive is snapping up Karmas from leftover dealer stock for conversion into Destino performance sedans, according to a report in industry trade journal Automotive News. MORE:

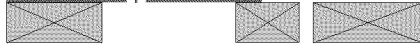
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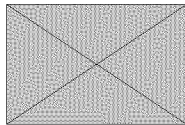
Who's Still Buying Brand-New Fisker...

[comments](#) | [read more](#)



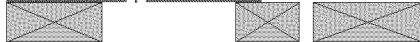
## Chrysler Hybrid Sedan And Minivan: Missing, Presumed Dead?

Jan 28, 2014 03:28 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



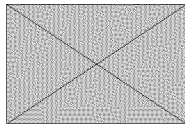
Pretty much every carmaker offers at least one hybrid model these days, even if they're notably unenthusiastic about it. (Have you ever seen an Audi Q5 Hybrid? Ahem.) But one carmaker is missing from a list that now numbers more than a dozen. And that maker is Chrysler-Fiat. Back in January 2011, Chrysler CEO Sergio Marchionne said at that year's...

[comments](#) | [read more](#)



## Tesla Model S: NY-To-FL Trip, From Home To South Carolina

Jan 28, 2014 02:56 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(David Noland)



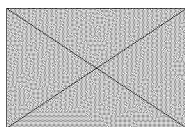
So far, the New York-to-Florida electric-car road trip in my 2013 Tesla Model S is progressing pretty much according to plan. That's not to say I haven't learned a few things in traveling via the newly-completed network of Tesla Supercharger DC quick-charging stations. One of them would be that cold weather really does cut the range of electric...

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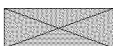
## Tesla Grapples With Charging-Cable Troubles In Norwegian Cold

Jan 28, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



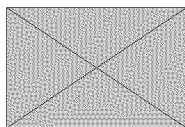
With truly Arctic temperatures hitting the U.S. and Canada over the past month, North Americans probably don't have a great deal of sympathy for their counterparts in Norway as winter finally closes in. But the Norwegian winter is causing plenty of trouble for Tesla Model S owners in the country, as the cold is playing havoc with the cars' ability...

[comments](#) | [read more](#)



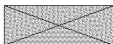
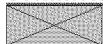
## Nissan Reveals Tiny Engine For Electric ZEOD Le Mans Racer

Jan 28, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



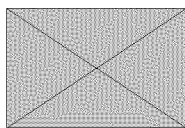
Downsizing isn't just a concept reserved for road-going vehicles--the world of motor racing is adopting the theory too. Smaller engines, turbocharging and hybrid technology is all the rage, with this year's F1 grid adopting all three in an effort to remain relevant. Nissan's ZEOD RC Le Mans car is going even further, and now one component of its...

[comments](#) | [read more](#)



## Volkswagen Launches New, More Efficient Polo Subcompact In Europe

Jan 28, 2014 10:09 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Back in the early 1970s, Volkswagen hit something of a milestone: It had sold over 15 million examples of its evergreen Beetle compact car. At 14 million and counting, it isn't hard to see VW's Polo subcompact breaking that barrier in the coming years, and maybe even eclipsing the Beetle's 21-million-strong overall record. That's not bad going for...

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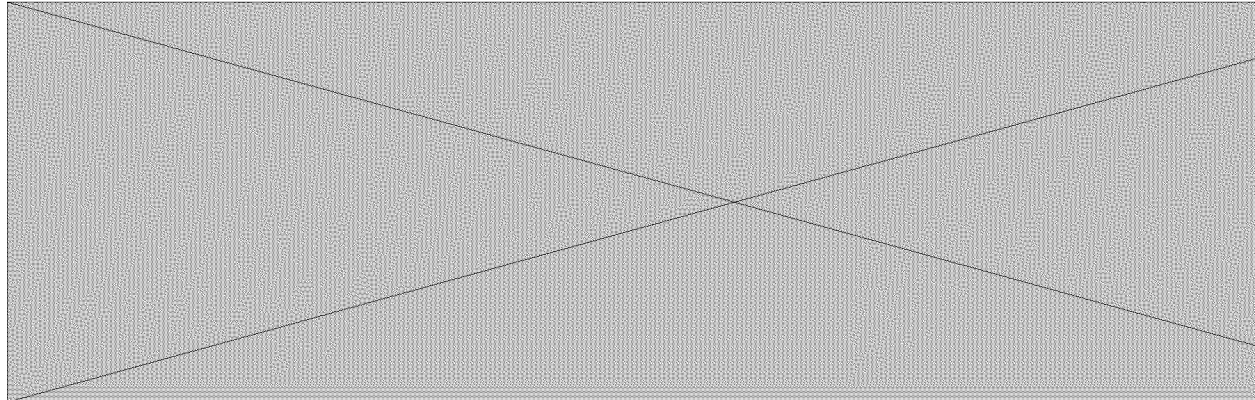
**From:** Miller, Anthony  
**Required Attendees:** Wick, Anne; Kaul, Meetu; Choi, Jake  
**Importance:** Normal  
**Subject:** Defeat Device Penalty Policy  
**Start Date/Time:** Mon 2/3/2014 6:00:00 PM  
**End Date/Time:** Mon 2/3/2014 7:00:00 PM

**From:** Kaul, Meetu  
**Importance:** Normal  
**Subject:** Accepted: Defeat Device Penalty Policy  
**Start Date/Time:** Mon 2/3/2014 6:00:00 PM  
**End Date/Time:** Mon 2/3/2014 7:00:00 PM

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 1/28/2014 7:26:05 PM  
**Subject:** SUPER BOWL ADS: VW, Toyota, CarMax, others prepare big spots for big game

January 28, 2014

[Click here to open this newsletter in a Web browser](#)



**This year's big game promises to be another big deal for the automotive industry. Check out our coverage of who's investing in Super Bowl advertising this year, and be sure to visit [autonews.com/superbowl](http://autonews.com/superbowl) after Sunday's game for post-game analysis.**

[VW's German engineers get their dynamic wings in Super Bowl ad](#)

. 10:44 am U.S. ET | Jan. 28, 2014

Volkswagen revealed its 60-second Passat commercial Tuesday for the Super Bowl this weekend. It features German engineers that, like Frank Capra's angels, strive to get their wings. The ad got some immediate buzz, including a discussion by the hosts of the "Today" show on NBC. ... » [READ](#)

[Ford aims to get jump on GM, rivals on Super Bowl Sunday](#)

. Published: 2:33 pm U.S. ET | Jan. 27, 2014

Ford is aiming to get out ahead of rival automakers on Super Bowl Sunday with a spot featuring actor

James Franco that will break after the coin toss. ...

[» READ](#)

### Jaguar execs tout Super Bowl spot

Published: 7:01 pm U.S. ET | Jan. 25, 2014

Jaguar executives want to keep the brand's sales momentum going with its first-ever Super Bowl commercial that touts a new variant of the F-Type.... [» READ](#)

### Blitz of Super Bowl auto ads pits Muppets vs. British villains

Published: 12:34 am U.S. ET | Jan. 24, 2014

From the Muppets to James Franco and British villains, Hollywood will be working hard for the auto industry during the Super Bowl.... [» READ](#)

### 2014 SUPER BOWL ADVERTISING

#### Toyota finds a Muppet connection for Super Bowl ad

Published: 4:50 pm U.S. ET | Jan. 21, 2014

>Toyota is teaming up with Disney to promote the launch of its redesigned Highlander mid-sized crossover, starting with a 60-second Super Bowl spot... [» READ](#)

- Automakers show blitz for advertising's big game

Jan. 11, 12:01 am U.S. ET

- VW to feature finicky German engineers in Super Bowl spot

Dec. 20, 3:22 pm U.S. ET

- Toyota returns to Super Bowl with Highlander spot

Dec. 17, 5:06 pm U.S. ET

Final  
Audi  
Super  
Bowl  
ad,  
"Dob

CarN  
Super  
Bowl  
ad  
exter  
cut

- Audi to showcase A3 sedan in Super Bowl spot

Dec. 13, 3:29 pm U.S. ET

- Hyundai preps Super Bowl pitches for Genesis, Elantra

Dec. 12, 5:25 pm U.S. ET

- British bad guys will be the stars of Jaguar ads

Nov. 11, 12:01 am U.S. ET

- In digital age, 'content factory' always churns

Sept. 16, 12:01 am U.S. ET

- Chevy plans Silverado ad stampede on SportsCenter's NFL opener

Sept. 5, 3:29 pm U.S. ET | UPDATED: 9/5/13 4:05 pm ET

Ford:  
"#ne:  
Super  
Bowl  
tease

Final  
Hyun  
Super  
Bowl  
ad,  
"Nice

Final  
Hyun  
Super  
Bowl  
ad,  
"Dad's  
Sixth  
Sens

Final  
Jagu  
Super  
Bowl  
ad,  
"Rendez

Final  
Kia  
Super  
Bowl  
ad,  
"The  
Truth

Final  
Toyo  
High  
Super  
Bowl  
ad



Final  
Volk  
Super  
Bowl  
ad  
"Win

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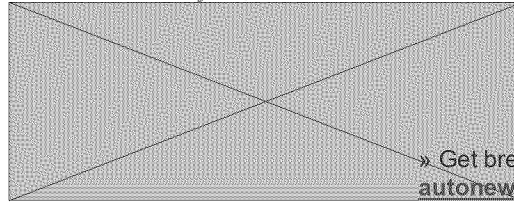
Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 1/28/2014 9:34:48 PM  
**Subject:** DAILY: Ford to idle F-150 factories for 13 weeks to prep for aluminum version | Ross Roberts, former Ford Div. chief and truck champion, dies at 75 | GM CEO Barra to be first lady's guest at tonight's State of the Union address

Today's most read story

**Dealers should respond to questions quickly or internet shoppers will leave**

January 28, 2014



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#### TOP NEWS

### **Ford to idle F-150 factories for 13 weeks to prep for aluminum version**

2:35 pm U.S. ET | Jan 28

Ford today said it plans 13 weeks of downtime for retooling this year at plants building the F-150 as it prepares to introduce the next generation of its top-selling pickup. ... » [READ](#)

### **Ross Roberts, former Ford Div. chief and truck champion, dies at 75**

3:33 pm U.S. ET | Jan 28

Ross Roberts, a former Ford Division general manager who helped turn trucks into everyday vehicles, died today. He was 75. ... » [READ](#)

Automotive News NADA show dailies  
[CLICK HERE for our coverage](#)

### **GM CEO Barra to be first lady's**

## guest at tonight's State of the Union address

6:38 am U.S. ET | Jan 28

Mary Barra, who took the reins as GM's CEO less than two weeks ago, will attend tonight's State of the Union address as a guest of first lady Michelle Obama, the White House said. ... » [READ](#)

## Ford earnings pinched by recalls, incentives

UPDATED: 1/28/14 4:15 p.m. ET - Adds closing stock price

7:03 am U.S. ET | Jan 28

Ford earned \$3 billion in the quarter, 90 percent more than the same period a year ago, though more than two-thirds of the profit was related to favorable tax benefits. Excluding the \$2.1 billion tax gain and other one-time items, Ford's pretax operating profit fell 24 percent to \$1.3 billion. ... » [READ](#)

## Honda's U.S. exports exceeded imports in '13

UPDATED: 1/28/14 8:44 am ET - details added

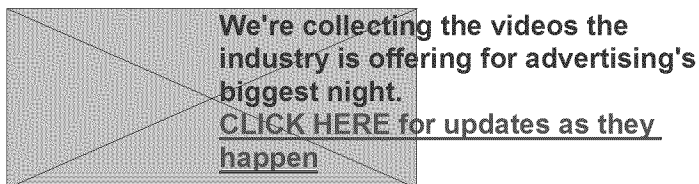
12:01 am U.S. ET | Jan 28

Honda exported more vehicles from its U.S. factories in 2013 than it imported into America from Japan -- a first for the automaker. Honda exported 108,705 American-made Honda and Acura vehicles, compared to 88,537 it brought in from Japan. ... » [READ](#)

## Tata boss Slym quarreled with wife before his death, Thai police say

1:34 am U.S. ET | Jan 28

Thai police investigating how Tata Motors chief Karl Slym died said he had an argument with his wife on the eve of his death. Slym, a former GM executive from England, fell from a Bangkok hotel window. ... » [READ](#)



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MIKE COLIAS

Why one Chevy dealer doesn't fear the Reaper

» [READ](#)

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 » Clinton greeted warmly by dealers, hails GM's Barra  
 » For Marchionne, shift in Fiat headquarters risks political pain for tax gain

### How to Find Good Engineers

Are you struggling to hire the engineering talent you need to keep pace with your expanding business? You're not alone. Three out of four parts makers are having trouble finding engineers, the Original Equipment Suppliers Association found in a survey last fall.

*Automotive News* will host a 30-minute webinar this Thursday to provide answers to the challenge. Get strategies for identifying talent and give tips for making your hiring bids successful - sign up today!

### Viral video rankings for week of 1/28/2014

#### VW's German engineers tackle the perfect Super ad

12:01 am U.S. ET | Jan 28

Early jostling for the title of Super Bowl XLVIII advertising champion has shaken up our list of this week's top viral videos. ... » Watch the videos



» 1/30 - Hiring Engineers by Automotive News

» 2/6 - The Road to the Sale by MAX

» 2/11 - Mobile Shoppers by Cars.com

### Daimler hit by surprise departure

» April 7, 2014 -

**of Mercedes production chief  
Renschler**

3:25 pm U.S. ET | Jan 28

**Toyota to curb Japan output 15%  
in April as tax hike kicks in**

7:25 am U.S. ET | Jan 28

**VW's German engineers get their  
dynamic wings in Super Bowl ad**

10:44 am U.S. ET | Jan 28

**Kia's Super Bowl ad features  
Fishburne and The Matrix**

2:03 pm U.S. ET | Jan 28

**Toyota eyes off-lease returns for  
growth**

3:29 pm U.S. ET | Jan 27

**Cadillac aims for double-digit  
growth**

4:58 pm U.S. ET | Jan 26

**Buick extends lease promotion**

6:57 pm U.S. ET | Jan 26

**Honda targets record year,  
expects 6% gain in U.S. sales**

6:49 pm U.S. ET | Jan 26

**BMW exec wants U.S. dealers to  
generate higher CSI scores**

5:46 pm U.S. ET | Jan 26

**VW urged by workers to build  
new model at German plant**

5:06 am U.S. ET | Jan 28

**Buffett's Berkshire acquires  
MyAssist in-car concierge service  
used by Mercedes, Ford**

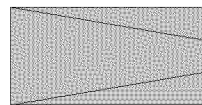
4:49 pm U.S. ET | Jan 27

**Churn, downtime and broken**

## momentum: Analysts on Ford earnings, outlook

UPDATED: 1/28/14 3:20 pm ET

9:26 am U.S. ET | Jan 28



### PACE Awards

» May 14 -

Marketing

Seminar - Los

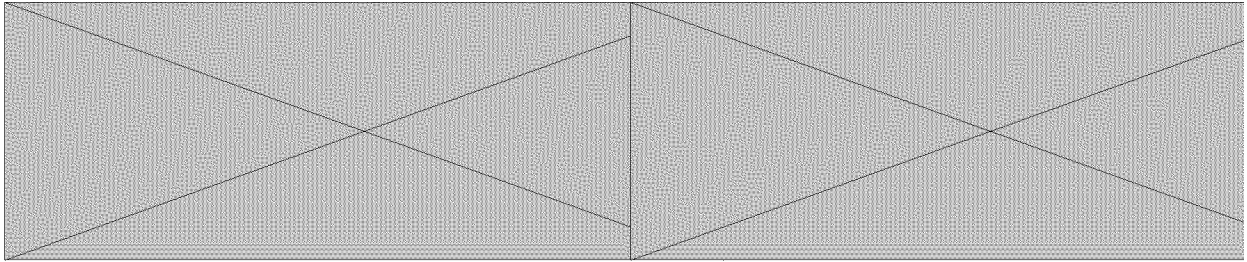
Angeles

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..

**To:** richard.thomas@vw.com[richard.thomas@vw.com]  
**From:** Good, David  
**Sent:** Wed 1/29/2014 8:01:36 PM  
**Subject:** Winter grade Diesel fuel

Richard,

FYI---Winter grade diesel fuel (as used for the litmus test) is discussed in the preamble of the 2008 FE Label final rule, pages 71 FR 77905 and 71 FR 77911, Dec 27, 2006; and in the regulations at 86.213-11(b).

Dave



**To:** Poirier, Christi[Poirier.Christi@epa.gov]  
**Cc:** Abbas, Kassem[Abbas.Kassem@epa.gov]; Danzeisen, Karen[Danzeisen.Karen@epa.gov]; Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]; Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Ex. 6  
**Sent:** Wed 1/29/2014 8:26:09 PM  
**Subject:** RE: Database Authorization Request - VGA (Verify-20356)

Hello Kassem,

Will you authorize this database update?

**Ex. 6**

Verify Help Desk  
Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

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▼ "Poirier, Christi" ---01/29/2014 03:16:42 PM---"Poirier, Christi" <Poirier.Christi@epa.gov>

To "Snyder, Jim" <Snyder.Jim@epa.gov>, Verify Help Desk@CSC

"Poirier, Christi" <Poirier.Christi@epa.gov>

cc "Abbas, Kassem" <Abbas.Kassem@epa.gov>, "Danzeisen, Karen" <Danzeisen.Karen@epa.gov>, "Peavyhouse, Robert" <Peavyhouse.Robert@epa.gov>

01/29/2014 03:16 PM

Subject RE: Database Authorization Request - VGA (Verify-20356)

Thanks Jim.

**From:** Snyder, Jim  
**Sent:** Wednesday, January 29, 2014 3:14 PM  
**To:** Verify Help Desk; Poirier, Christi  
**Cc:** Abbas, Kassem; Danzeisen, Karen; Peavyhouse, Robert

**Subject:** RE: Database Authorization Request - VGA (Verify-20356)

I talked to the manufacturer and they have only issued 2 certificates with the new Manufacturer Code and names. They have agreed to re-submit those certificates after the change so they are in consistent . I therefore recommend that we grant their request to manually change them this one time.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Ex. 6 **On Behalf Of** Verify Help Desk  
**Sent:** Wednesday, January 29, 2014 2:45 PM  
**To:** Poirier, Christi  
**Cc:** Abbas, Kassem; Danzeisen, Karen; Peavyhouse, Robert; Snyder, Jim  
**Subject:** RE: Database Authorization Request - VGA (Verify-20356)

Hello Christi,

The manufacturer reports that these division codes have been used on certificates and fuel economy labels and he does not want to make them inactive. He provided the following reason for his request to modify the division names.

"EPA references for everything the long names in Verify instead of short name and there our cars are described, for example: Volkswagen AG Jetta, instead of Volkswagen Jetta. This was not made clear when we set up the divisions.  
Bill"

Ex. 6

Verify Help Desk  
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▼ "Poirier, Christi" ---01/29/2014 01:32:39 PM---"Poirier, Christi" <[Poirier.Christi@epa.gov](mailto:Poirier.Christi@epa.gov)>

To Verify Help Desk@CSC

"Poirier, Christi"

<Poirier.Christi@epa.gov>

cc

"Abbas, Kassem" <Abbas.Kassem@epa.gov>, "Danzeisen, Karen" <Danzeisen.Karen@epa.gov>, "Peavyhouse, Robert" <Peavyhouse.Robert@epa.gov>, "Snyder, Jim" <Snyder.Jim@epa.gov>

01/29/2014 01:32 PM

Subject RE: Database Authorization Request - VGA (Verify-20356)

Actually **Ex. 6** Bob just pointed out that this is a new manufacturer code for VW. If that is the case and if those division codes have not been used on any certificates or fuel economy labels then it is probably ok to make these changes this one time. Sorry about the confusion.

Christi

**From:** **Ex. 6** **On Behalf Of** Verify Help Desk  
**Sent:** Wednesday, January 29, 2014 1:09 PM  
**To:** Poirier, Christi  
**Cc:** Abbas, Kassem; Danzeisen, Karen; Peavyhouse, Robert; Snyder, Jim; Verify Help Desk  
**Subject:** RE: Database Authorization Request - VGA (Verify-20356)

Thank you Christi. I will let the manufacturer know.

**Ex. 6**

Verify Help Desk  
Staffed by Computer Sciences Corporation,  
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▼ "Poirier, Christi" ---01/29/2014 11:56:30 AM---"Poirier, Christi" <Poirier.Christi@epa.gov>

To "Abbas, Kassem" <[Abbas.Kassem@epa.gov](mailto:Abbas.Kassem@epa.gov)>

cc Verify Help Desk@CSC, "Peavyhouse, Robert"  
<[Peavyhouse.Robert@epa.gov](mailto:Peavyhouse.Robert@epa.gov)>, "Danzeisen, Karen"  
<[Danzeisen.Karen@epa.gov](mailto:Danzeisen.Karen@epa.gov)>, "Snyder, Jim" <[Snyder.Jim@epa.gov](mailto:Snyder.Jim@epa.gov)>

"Poirier, Christi"

<[Poirier.Christi@epa.gov](mailto:Poirier.Christi@epa.gov)>

01/29/2014 11:56 AM

Subject RE: Database Authorization Request - VGA (Verify-20356)

No, these changes should not be made to VW's existing division codes. VW should instead create new division codes with the desired names and make the old ones inactive. We purposely blocked manufacturers from being able to edit the division name after it is initially created since it will cause problems for any certification or fuel economy actions that used the same division code.

**From:** Abbas, Kassem  
**Sent:** Wednesday, January 29, 2014 8:39 AM  
**To:** Poirier, Christi  
**Cc:** Verify Help Desk  
**Subject:** RE: Database Authorization Request - VGA (Verify-20356)

Christi,  
Is it okay to manually modify the division names?  
Thanks

Kassem Abbas, IT Specialist  
Data Analysis and Information Center

Compliance Division  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency  
(734) 214 4337 [abbas.kassem@epa.gov](mailto:abbas.kassem@epa.gov)

**From:** **Ex. 6** **On Behalf Of** Verify Help Desk

**Sent:** Tuesday, January 28, 2014 4:46 PM  
**To:** Abbas, Kassem  
**Subject:** Database Authorization Request - VGA (Verify-20356)

Hello Kassem,

Volkswagen of America (VGA) has requested the modification of their short and long Division Names for their new manufacturer code. This request will require a database script be run in Production.

Will you authorize this database update for this modification to their Division Names (see attached).

Vincent

Verify Help Desk  
Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

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▼ "Rodgers, William (EEO)" ---01/22/2014 11:28:39 AM---"Rodgers, William (EEO)"  
<[William.Rodgers@vw.com](mailto:William.Rodgers@vw.com)>

To Verify Help Desk@CSC

cc

"Rodgers, William (EEO)"  
<[William.Rodgers@vw.com](mailto:William.Rodgers@vw.com)>

Subject FW: VW Group - Verify Manufacturer Division Names

01/22/2014 11:28 AM

Hello Vince,  
Happy new year.

Toward the end of the year we set up Verify with the new manufacturer code VGA for the Volkswagen Group and established the following Division codes and (Short/Full) Division Names. We are not able to change or correct this information in Verify. We are requesting that the Short and Full Division Names to be made identical as noted below to more accurately describe vehicles in the EPA fuel economy guide, Certification Summary Information (CSI) report and Certificates of Conformity. Please have these changes made as soon as possible. Once this is completed we can correct any necessary files on our end.

Division names Short/Full

**CURRENTLY:**

Div. #1\_VW / Volkswagen AG;

Div. #2\_Audi / Audi AG

Div. #3\_Bentley / Bentley Motors Ltd

Div. #4\_Lamborghini / Automobili Lamborghini S.p.A.

Div. #5\_Bugatti / Bugatti Automobili S.A.S.

**REQUESTED Modification:**

Div. #1\_Volkswagen / Volkswagen;

Div. #2\_Audi / Audi

Div. #3\_Bentley / Bentley

Div. #4\_Lamborghini / Lamborghini

Div. #5\_Bugatti / Bugatti

Thanks,  
Bill Rodgers  
VWGoA EEO  
(248) 754-4219

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Giles, Michael (EEO)[michael.giles@vw.com]; Allen, Gregory[Gregory.Allen@vw.com]  
**From:** Rodgers, William (EEO)  
**Sent:** Thur 1/30/2014 12:33:21 PM  
**Subject:** VW Group Certification Requests submitted

Hi Jim,

Based on the division name changes that were completed yesterday, I have submitted two Certification Requests for new certificate processing.

Test groups:

FVGAV02.0APA

And

FVGAV02.0AUA

Thanks again for your help making this change happen.

Regards,

Bill Rodgers

VWGoA EEO

(248) 754-4219

**To:** Good, David[good.david@epa.gov]  
**Cc:** Glas, Tobias[Tobias.Glas@vw.com]  
**From:** Thomas, Richard (EEO)  
**Sent:** Thur 1/30/2014 2:53:58 PM  
**Subject:** IUVP Contact

Hi Dave;

Our IUVP contact is Mr. Tobias Glas, office phone number 248 754 4211, cell Ex. 6  
email address is [Tobias.Glas@VW.com](mailto:Tobias.Glas@VW.com) .

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)




**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**Cc:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Mazaitis, Vincent  
**Sent:** Thur 1/30/2014 3:07:12 PM  
**Subject:** FAPA-AAF  
FAPA-AAF 1-29-14.pdf

Please find enclosed the Laboratory Test Data for the Subject vehicle. If you have any questions or concerns, please contact me.

Thank You,

Vincent Mazaitis

(734)214-4864

NVFEL Laboratory Test Data						CVS	
Final Laboratory Test Results- Refer to VERIFY Reports for Official Data							
Test Information			Vehicle ID: FAPA-AAF				
	Test Date: 1/29/2014		MFR Name: Volkswagen Group of				
	Key Start / Hot Soak: 08:47:13 / 10:04		MFR Codes: 10015 VGA				
	Fuel Container ID: F00021		Config #: 01				
	Fuel Type: 61 Tier 2 Cert Test Fuel		Transmission: AUTO				
	Test Procedure: 21 Federal fuel 2-day exhaust (w/can loa		Shift Schedule: A09980005				
	Calculation Method: Gasoline		Beginning Odometer: 004888.0 MI				
Pretest Remarks:			Drive Schedule: ftp3bag				
			Soak Period: 24.5 hours				
<b>Bag Data</b>							
	<u>HC-FID</u>	<u>CO</u>	<u>NOx</u>	<u>CO2</u>	<u>CH4</u>	<u>NonMeth HC</u>	
<b>Phase 1</b>	(ppmC)	(ppm)	(ppm)	(%)	(ppm)	(ppmC)	
Sample	7.557	22.215	0.527	1.116	2.765		
Ambient	4.593	0.442	0.022	0.048	2.127		
Net Concentration	3.348	21.810	0.507	1.072	0.816	2.467	
Remarks:							
<b>Phase 2</b>							
Sample	4.298	3.456	0.258	0.724	2.030		
Ambient	4.488	0.554	0.022	0.048	2.118		
Net Concentration	0.053	2.931	0.238	0.679	0.026	0.025	
Remarks:							
<b>Phase 3</b>							
Sample	4.539	3.112	0.262	0.986	2.222		
Ambient	4.599	0.988	0.025	0.048	2.114		
Net Concentration	0.279	2.197	0.239	0.941	0.264	-0.006	
Remarks:							
<b>Phase 4</b>							
Sample							
Ambient							
Net Concentration							
Remarks:							
<b>Results</b>	<u>HC-FID</u>	<u>CO</u>	<u>NOx</u>	<u>CO2</u>	<u>CH4</u>	<u>NMHC / NMOG</u>	<u>Vol MPG</u>
	(gpm)	(gpm)	(gpm)	(gpm)	(gpm)	(gpm)	(mpg)
Phase 1	0.031	0.414	0.014	319.7	0.009	0.023 / 0.024	27.888
	0.001	0.088	0.010	321.3	0.000	0.000 / 0.000	27.795
	0.003	0.041	0.007	279.0	0.003	0.000 / 0.000	32.023
Weighted	0.00763	0.14275	0.01013	309.365	0.00285	(NMOG=1.04xNMHC) 0.0050 / 0.0052	
<b>Fuel Economy</b>	<u>Gasoline MPG</u>	<u>Dyno Settings</u>					<u>Dyno #:</u> D002
Phase 1	27.85						Inertia: 3500
Phase 2	27.75						EPA Set Co A: 12.77
Phase 3	31.98						EPA Set Co B: 0.0896
							EPA Set Co C: 0.01584
Weighted	28.85						Emiss-Bench: D002

**NVFEL Laboratory Test Data****CVS****Final Laboratory Test Results- Refer to VERIFY Reports for Official Data**

Test Number: 2014-0038-004

Vehicle ID: FAPA-AAF

<u>Results</u>	<u>HC-FID</u> (grams)	<u>CO</u> (grams)	<u>NOx</u> (grams)	<u>CO2</u> (grams)	<u>CH4</u> (grams)	<u>NMHC</u> (grams)	<u>Meth Response</u>
Phase 1	0.113	1.481	0.050	1144.1	0.032	0.083	1.080
	0.003	0.341	0.040	1242.2	0.002	0.001	
	0.009	0.149	0.024	1002.0	0.010	0.000	

**Test Conditions**

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>	<u>Phase 4</u>
Barometer (inHg)	29.09	29.09	29.09	
Avg Cell Temp (degF)	75.02	75.07	75.24	
Dew Point (degF)	47.09	47.20	45.14	
Specific Humidity (grains/lbm)	49.35	49.55	45.78	
NOx Corr Factor	0.8924	0.8931	0.8793	
CO2 Dilution Factor	11.978	18.486	13.581	
CFV Vmix (scf @68F)	2060.32	3531.80	2054.56	

CVS Flow Rate Avg (scfm) 244.07 243.43 243.38

Fan Placement: One Fan - Up - Front

Phase Time (secs)	506.50	870.50	506.51
Distance (miles)	3.579	3.866	3.592
Bag Analysis Time (secs)	142.5	142.0	141.2

	<u>FTP B1</u>	<u>FTP B2</u>	<u>FTP B3</u>	<u>FTP-W</u>
IWR % diff	1.892	4.290	4.225	3.785
ASCR % diff	1.088	2.638	3.195	2.507
EER	0.473	0.866	0.733	0.730

**MFR Test Results**


for Procedure 21 Federal fuel 2-day exhaust (w/can load)

<u>MFR Number</u>	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>CO2</u>	<u>NMOG</u>	<u>NonMeth HC</u>	
10028819	0.0065	0.27	0.0012	282	0	0.0035	0.0035

Odometer 4248 M MPG 31.3 PM 0.001  
MPG is 8.49 % higher than EPA MPG

MFR Lab: Audi AG Ingolstadt

Dyno: 8  
Fuel: 61 Tier 2 Cert Gasoline

NVFEL Laboratory Test Data							CVS
Final Laboratory Test Results- Refer to VERIFY Reports for Official Data							
Test Number: 2014-0038-005		Vehicle ID: FAPA-AAF					
	Test Date: 1/29/2014		MFR Name: Volkswagen Group of				
	Key Start: 10:14:43		MFR Codes: 10015 VGA				
	Fuel Container ID: F00021		Config #: 01				
	Fuel Type: 61 Tier 2 Cert Test Fuel		Transmission: AUTO				
	Test Procedure: 3		Shift Schedule: A09980011				
Calculation Method: Gasoline		Beginning Odometer: 004899.0 MI					
Pretest Remarks:		Drive Schedule: hwfet_hwfet					
<b>Bag Data</b>							
	<u>HC-FID</u>	<u>CO</u>	<u>NOx</u>	<u>CO2</u>	<u>CH4</u>	<u>NonMeth HC</u>	
<b>Phase 1</b>	(ppmC)	(ppm)	(ppm)	(%)	(ppm)	(ppmC)	
Sample	4.443	2.277	0.200	1.280	1.925		
Ambient	4.849	0.632	0.023	0.048	2.081		
Net Concentration	0.057	1.705	0.179	1.236	0.043	0.011	
Remarks:							
<b>Phase 2</b>							
Sample							
Ambient							
Net Concentration							
Remarks:							
<b>Phase 3</b>							
Sample							
Ambient							
Net Concentration							
Remarks:							
<b>Phase 4</b>							
Sample							
Ambient							
Net Concentration							
Remarks:							
<b>Results</b>							
	<u>HC-FID</u>	<u>CO</u>	<u>NOx</u>	<u>CO2</u>	<u>CH4</u>	<u>NMHC / NMOG</u>	<u>Vol MPG</u>
	(gpm)	(gpm)	(gpm)	(gpm)	(gpm)	(gpm)	(mpg)
Phase 1	0.000	0.017	0.002	191.3	0.000	0.000 / 0.000	46.711
(NMOG=1.04xNMHC)							
<b>Fuel Economy</b>							
	<u>Gasoline MPG</u>	<u>Dyno Settings</u>			<u>Dyno #:</u> D002		
Phase 1	46.64				Inertia: 3500		
					EPA Set Co A: 12.77		
					EPA Set Co B: 0.0896		
					EPA Set Co C: 0.01584		
					Emiss-Bench: D002		
<div style="display: flex; justify-content: space-between; font-size: small;"> <span>v130711 - d002 EPAVDAEm140129093705</span> <span>Page 1 of 2</span> <span>Print Time 29-Jan-2014 16:32</span> </div>							

**NVFEL Laboratory Test Data****CVS**

Final Laboratory Test Results- Refer to VERIFY Reports for Official Data

Test Number: 2014-0038-005

Vehicle ID: FAPA-AAF

<u>Results</u>	<u>HC-FID</u> (grams)	<u>CO</u> (grams)	<u>NOx</u> (grams)	<u>CO2</u> (grams)	<u>CH4</u> (grams)	<u>NMHC</u> (grams)	<u>Meth Response</u>
Phase 1	0.003	0.172	0.026	1962.6	0.003	0.001	1.080

**Test Conditions**

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>	<u>Phase 4</u>
Barometer (inHg)	29.10			
Avg Cell Temp (degF)	75.15			
Dew Point (degF)	41.80			
Specific Humidity (grains/lbm)	40.22			
NOx Corr Factor	0.8595			
CO2 Dilution Factor	10.463			
CFV Vmix (scf @68F)	3063.71			

CVS Flow Rate Avg (scfm) 240.29

Fan Placement: One Fan - Up - Front

Phase Time (secs)	765.00
Distance (miles)	10.261
Bag Analysis Time (secs)	142.9

	<u>HWY</u>
IWR % diff	6.235
ASCR % diff	4.503
EER	-0.680

**MFR Test Results**

for Procedure 3 HWFE

<u>MFR Number</u>	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>CO2</u>	<u>NMOG</u>	<u>NonMeth HC</u>	
10028821	0.0025	0.06	0.002	185	0	0.0015	0.0012


Odometer  
4374 MMPG  
47.7

MPG is 2.27 % higher than EPA MPG

MFR Lab: Audi AG Ingolstadt

Dyno: 8  
Fuel: 61 Tier 2 Cert Gasoline

Rep

NVFEL Laboratory Test Data							CVS
Final Laboratory Test Results- Refer to VERIFY Reports for Official Data							
Test Number: 2014-0038-006				Vehicle ID: FAPA-AAF			
	<b>Test Information</b>			<b>Test Date:</b> 1/29/2014			
				<b>Key Start:</b> 11:04:58			
				<b>Fuel Container ID:</b> F00021			
				<b>Fuel Type:</b> 61 Tier 2 Cert Test Fuel			
				<b>Test Procedure:</b> 89 us062bag (us06warmup_2bagus06)			
				<b>Calculation Method:</b> Gasoline			
				<b>Pretest Remarks:</b> Wood blocks used to raise fan.			
				<b>MFR Name:</b> Volkswagen Group of			
				<b>MFR Codes:</b> 10015 VGA			
				<b>Config #:</b> 01			
				<b>Transmission:</b> AUTO			
				<b>Shift Schedule:</b> A09980041			
				<b>Beginning Odometer:</b> 004920.0 MI			
				<b>Drive Schedule:</b> us06warmup_2bagus06			
<b>Bag Data</b>							
		<b>HC-FID</b>	<b>CO</b>	<b>NOx</b>	<b>CO2</b>	<b>CH4</b>	<b>NonMeth HC</b>
<b>Phase 1</b>		(ppmC)	(ppm)	(ppm)	(%)	(ppm)	(ppmC)
Sample		5.201	6.512	2.014	1.158	2.350	
Ambient		4.482	0.705	0.027	0.048	2.057	
Net Concentration		1.107	5.868	1.989	1.114	0.471	0.598
Remarks: Wood block used to raise fan....							
<b>Phase 2</b>							
Sample		5.163	9.808	0.409	1.365	2.213	
Ambient		4.501	0.695	0.028	0.048	2.056	
Net Concentration		1.121	9.184	0.384	1.322	0.367	0.725
Remarks:							
<b>Phase 3</b>							
Sample							
Ambient							
Net Concentration							
Remarks:							
<b>Phase 4</b>							
Sample							
Ambient							
Net Concentration							
Remarks:							
<b>Results</b>							
		<b>HC-FID</b>	<b>CO</b>	<b>NOx</b>	<b>CO2</b>	<b>CH4</b>	<b>NMHC / NMOG</b>
		(gpm)	(gpm)	(gpm)	(gpm)	(gpm)	(gpm)
Phase 1		0.015	0.162	0.075	482.5	0.007	0.008 / 0.008
		0.007	0.110	0.006	248.4	0.003	0.004 / 0.004
Composite		0.00851	0.12126	0.02150	300.039	0.00360	0.0051 / 0.0054
							(NMOG=1.04xNMHC)
<b>Fuel Economy</b>							<b>Dyno Settings</b>
		<b>Gasoline MPG</b>					<b>Dyno #:</b> D002
Phase 1		18.48					Inertia: 3500
Phase 2		35.90					EPA Set Co A: 12.77
							EPA Set Co B: 0.0896
							EPA Set Co C: 0.01584
Composite		29.72					Emiss-Bench: D002
v130711 - d002 EPAVDAEm140129103523 Page 1 of 2 Print Time 29-Jan-2014 16:33							

**NVFEL Laboratory Test Data****CVS**

Final Laboratory Test Results- Refer to VERIFY Reports for Official Data

Test Number: 2014-0038-006

Vehicle ID: FAPA-AAF

<u>Results</u>	<u>HC-FID</u> (grams)	<u>CO</u> (grams)	<u>NOx</u> (grams)	<u>CO2</u> (grams)	<u>CH4</u> (grams)	<u>NMHC</u> (grams)	<u>Meth Response</u>
Phase 1	0.027	0.286	0.133	854.7	0.013	0.014	1.080
	0.042	0.687	0.039	1553.5	0.016	0.027	

**Test Conditions**

	<u>Phase 1</u>	<u>Phase 2</u>	<u>Phase 3</u>	<u>Phase 4</u>
Barometer (inHg)	29.10	29.10		
Avg Cell Temp (degF)	74.73	75.43		
Dew Point (degF)	35.84	37.35		
Specific Humidity (grains/lbm)	31.80	33.76		
NOx Corr Factor	0.8312	0.8376		
CO2 Dilution Factor	11.561	9.808		
CFV Vmix (scf @68F)	1480.52	2268.39		

CVS Flow Rate Avg (scfm) 374.82 372.89

Fan Placement: US06 Only - One Large Fan - Down - Front

Phase Time (secs)	130.00	365.00	107.00
Distance (miles)	1.771	6.255	
Bag Analysis Time (secs)	148.1	400.2	

	<u>US06-C</u>	<u>US06-H</u>	<u>US06-T</u>
IWR % diff	0.892	-6.758	-2.830
ASCR % diff	-0.024	-5.171	-1.654
EER	0.182	-0.637	-0.412

**MFR Test Results**

for Procedure 90 US06

<u>MFR Number</u>	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>CO2</u>	<u>NMOG</u>	<u>NonMeth HC</u>	
10028820	0.0144	0.2	0.047	274	0	0.0102	0.0049

Odometer 4382 M  
MPG 32.2  
PM 0.007  
MPG is 8.35 % higher than EPA MPG

MFR Lab: Audi AG Ingolstadt

Dyno: 8  
Fuel: 61 Tier 2 Cert Gasoline

**To:** Mazaitis, Vincent[mazaitis.vincent@epa.gov]  
**Cc:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Rodgers, William (EEO)  
**Sent:** Thur 1/30/2014 4:10:32 PM  
**Subject:** RE: FAPA-AAF

Thanks.

@Jim we will let you know regarding any retests tomorrow.

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

william.rodgers@vw.com

**From:** Mazaitis, Vincent [mailto:mazaitis.vincent@epa.gov]  
**Sent:** Thursday, January 30, 2014 10:07 AM  
**To:** Rodgers, William (EEO)  
**Cc:** Snyder, Jim  
**Subject:** FAPA-AAF

Please find enclosed the Laboratory Test Data for the Subject vehicle. If you have any questions or concerns, please contact me.



Thank You,

Vincent Mazaitis

(734)214-4864

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Mazaitis, Vincent[mazaitis.vincent@epa.gov]  
**From:** Snyder, Jim  
**Sent:** Thur 1/30/2014 5:20:24 PM  
**Subject:** RE: FAPA-AAF

Bill, I will be offsite Friday so CC Vince on the note in case a re-test request needs to be submitted.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Rodgers, William (EEO) [mailto:William.Rodgers@vw.com]  
**Sent:** Thursday, January 30, 2014 11:11 AM  
**To:** Mazaitis, Vincent  
**Cc:** Snyder, Jim  
**Subject:** RE: FAPA-AAF

Thanks.

@Jim we will let you know regarding any retests tomorrow.

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**From:** Mazaitis, Vincent [<mailto:mazaitis.vincent@epa.gov>]

**Sent:** Thursday, January 30, 2014 10:07 AM

**To:** Rodgers, William (EEO)

**Cc:** Snyder, Jim

**Subject:** FAPA-AAF

Please find enclosed the Laboratory Test Data for the Subject vehicle. If you have any questions or concerns, please contact me.

Thank You,

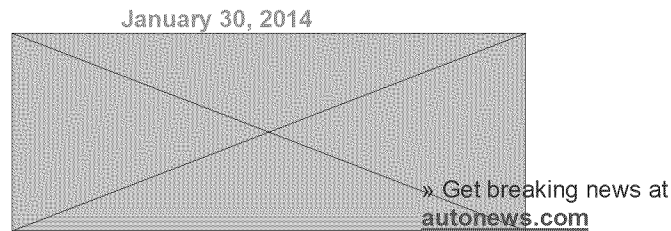
Vincent Mazaitis

(734)214-4864

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Thur 1/30/2014 9:49:31 PM  
**Subject:** DAILY: Toyota tells N.A. dealers to stop selling 8 models for possible fire risk | Snow, ice hamper auto production in the South | AutoNation's Jackson calls 2013 a 'perfect year'

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UPDATED: 1/30/14 3:20 pm ET - adds details  
11:23 am U.S. ET | Jan 30

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UPDATED: 1/30/14 4:24 pm ET - adds closing stock

price

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After a year that he described as “perfect” for his company, AutoNation CEO Mike Jackson is looking for more of the same for 2014. “I’m pretty optimistic. The powerful drivers are still there,” Jackson told Automotive News today after announcing robust fourth-quarter profits. ... » [READ](#)

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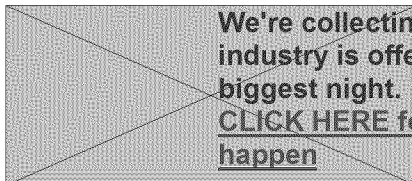
5:47 pm U.S. ET | Jan 29

Ford is encouraging its more than 3,000 dealerships and their employees and Ford company employees to help create buzz for an advertising spot scheduled to air before the Super Bowl, and sustain it for several weeks after. ... » [READ](#)

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11:00 am U.S. ET | Jan 30

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» Chrysler to feature Bob Dylan in Super Bowl ad, report says  
» Marchionne letter to Chrysler employees

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3:42 pm U.S. ET | Jan 30

**BMW will end Mini production at Magna Steyr in 2016, report says**

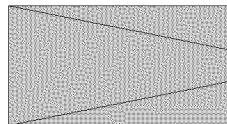
11:14 am U.S. ET | Jan 30

**Maserati boom signals Fiat saying 'arrivederci' to its Italian past**

6:41 am U.S. ET | Jan 30

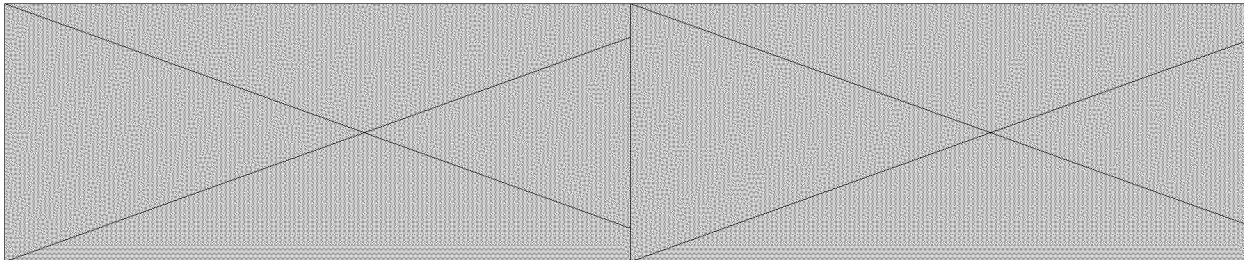
**After Obama kudos, supplier executive pushes for hiring incentives**

12:33 pm U.S. ET | Jan 30



» 2/6 - The Road to the Sale by MAX  
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..

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Giles, Michael (EEO)[michael.giles@vw.com]; Allen, Gregory[Gregory.Allen@vw.com]; Kata, Leonard (EEO)[Leonard.Kata@vw.com]  
**From:** Mazaitis, Vincent  
**Sent:** Fri 1/31/2014 1:19:59 PM  
**Subject:** RE: FAPA-AAF

Will do.

Thanks Bill,

Vince Mazaitis

**From:** Rodgers, William (EEO) [mailto:William.Rodgers@vw.com]  
**Sent:** Friday, January 31, 2014 7:47 AM  
**To:** Snyder, Jim; Mazaitis, Vincent  
**Cc:** Giles, Michael (EEO); Allen, Gregory; Kata, Leonard (EEO)  
**Subject:** RE: FAPA-AAF

Hello Jim and Vince,

We have decided to accept the EPA test results as official. Please release the vehicle for transport pick up today Friday.

Regards,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office



Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**From:** Snyder, Jim [<mailto:Snyder.Jim@epa.gov>]  
**Sent:** Thursday, January 30, 2014 12:20 PM  
**To:** Rodgers, William (EEO); Mazaitis, Vincent  
**Subject:** RE: FAPA-AAF

Bill, I will be offsite Friday so CC Vince on the note in case a re-test request needs to be submitted.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Rodgers, William (EEO) [<mailto:William.Rodgers@vw.com>]  
**Sent:** Thursday, January 30, 2014 11:11 AM  
**To:** Mazaitis, Vincent  
**Cc:** Snyder, Jim  
**Subject:** RE: FAPA-AAF

Thanks.

@Jim we will let you know regarding any retests tomorrow.

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**From:** Mazaitis, Vincent [<mailto:mazaitis.vincent@epa.gov>]

**Sent:** Thursday, January 30, 2014 10:07 AM

**To:** Rodgers, William (EEO)

**Cc:** Snyder, Jim

**Subject:** FAPA-AAF

Please find enclosed the Laboratory Test Data for the Subject vehicle. If you have any questions or concerns, please contact me.

Thank You,

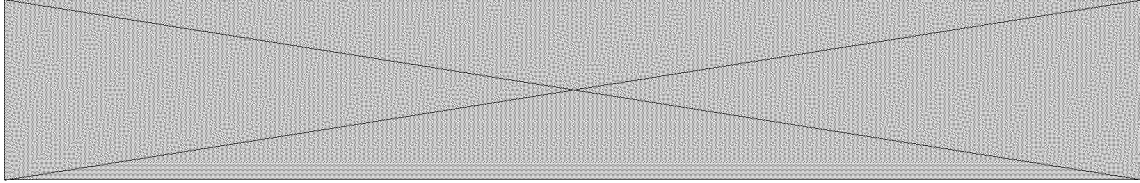
Vincent Mazaitis

(734)214-4864



**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Fri 1/31/2014 5:03:49 PM  
**Subject:** Green Car Report Daily Headlines

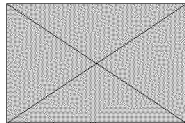
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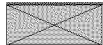
## Green Car Myths, Saleen's Tesla & Plug-In Golf: Today's Car News

Jan 31, 2014 04:50 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



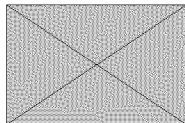
Today on Green Car Reports: We're debunking even more myths about green cars, car-builder Saleen has said its first performance electric car will be based on Tesla's Model S, and VW has announced its plug-in hybrid Golf will carry the sporty GTE badge. All this and more on Green Car Reports. Saleen said it wants to build a tuned electric car. What...

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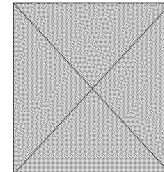
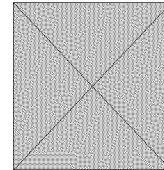
## 2014 Jeep Cherokee Limited 4X4: Gas Mileage Test With V- 6

Jan 31, 2014 04:42 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



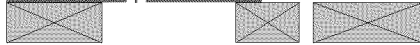
It's winter in the Northeast, and last week's Polar Vortex luckily came along just as our weekend test car was a 2014 Jeep Cherokee. This is the all-new compact crossover that replaces the old truck-like Jeep Liberty, going head-to-head with popular compact crossover utilities like the Chevy Equinox, Ford Escape,

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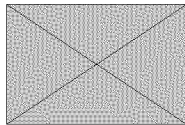
Honda CR-V, Hyundai Santa Fe...

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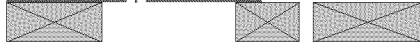
## Tesla Model S Drag Races: Noisy Or Very Quiet, Your Choice (Videos)

Jan 31, 2014 03:26 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



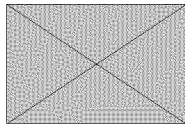
If you're looking for a car to take drag racing, you might want to consider a Tesla Model S electric sedan. Drag Times posted the video above of a race between a 2013 Tesla Model S P85 and a 2014 Corvette equipped with the Z51 performance package, which took place at Palm Beach International Raceway. An electric luxury sedan and a V-8 sports car...

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## Five MORE Big Myths About Green Cars And Gas Mileage, Debunked

Jan 31, 2014 02:59 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



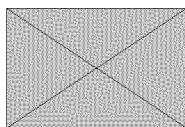
Yep, Big Oil is definitely scheming and plotting to destroy the electric car. Everyone knows that. Right? [sigh] Time for more mythbusting, it seems. The surprising success of our first debunking of five green-car myths led us to look at five more relatively common ideas and explain ... well, as they say: NOT. MORE: Five Big Myths About Green Cars...

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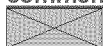
## Which State Has The Highest Percentage Of Electric Cars? No, Not CA

Jan 31, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



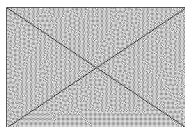
California has something of a reputation for being an electric car haven. The state has always been concerned about pollution, offers healthy incentives for those wishing to purchase an electric vehicle, and if you're keen to charge using solar power, there's an abundance of sun to make the most of it. It isn't, however, the state with the largest...

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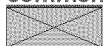
## Upcoming Volkswagen Golf Plug-In Hybrid To Be Dubbed GTE Model

Jan 31, 2014 11:55 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



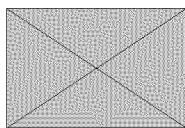
First, there were the all-new 2015 Volkswagen Golf and GTI models. Then came the diesel-powered Golf GTD. Now, Volkswagen will create a sporty-hatchback GT trilogy with the GTE. GTE stands for GT Electric, and it will be the badge worn by Volkswagen's upcoming Golf plug-in hybrid model--distinct from "e-Golf," the model name for the...

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## Had To Happen: High-Performance Tesla Model S From Saleen On The Way

Jan 31, 2014 11:00 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Saleen Automotive is well-known for its high-performance tuning on familiar models like the Ford Mustang. But what car do you choose if you want to tackle an electric model? Given the Ford connection, maybe the Focus EV? Perhaps the high-selling Nissan Leaf? No--instead you go for an electric car that's already fast: The Tesla Model S. Saleen had...

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Menlo Park, CA 94025

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**To:** mb-nathan-hinderer [nathan.hinderer@daimler.com];  
william.meschievitz@tema.toyota.com[william.meschievitz@tema.toyota.com];  
tommy\_chang@ahm.honda.com[tommy\_chang@ahm.honda.com];  
JRugge@subaru.com[JRugge@subaru.com]; nokawa@mazdausa.com[nokawa@mazdausa.com];  
dennis.pawlak@na.mitsubishi-motors.com[dennis.pawlak@na.mitsubishi-motors.com];  
KhanF@NRD.NISSAN-USA.COM[KhanF@NRD.NISSAN-USA.COM]; Tobias Glas[tobias.glas@vw.com];  
Peace O Uwague[peace.ouwague@bmwnaext.com]; rds116@chrysler.com[rds116@chrysler.com];  
ghall12@jaguarlandrover.com[ghall12@jaguarlandrover.com];  
rbarre20@volvocars.com[rbarre20@volvocars.com]; Beth Borland [bab11@chrysler.com]; Mark M  
Poll[mpoll1@ford.com]; christopher.cislo@gm.com[christopher.cislo@gm.com];  
ross.gatzke@porsche.us[ross.gatzke@porsche.us]; balsip@suz.com[balsip@suz.com]; Lindsey  
Jeng[ljeng@hatci.com]  
**Cc:** Dave Barker[dba1@subaru.com];  
peter\_meier@ahm.honda.com[peter\_meier@ahm.honda.com];  
tom.beierschmitt@tema.toyota.com[tom.beierschmitt@tema.toyota.com];  
drobertson@mazdausa.com[drobertson@mazdausa.com]; david.patterson@na.mitsubishi-  
motors.com[david.patterson@na.mitsubishi-motors.com]; yamaday@ntcna.nissan-  
usa.com[yamaday@ntcna.nissan-usa.com]; oliver.schmidt@vw.com[oliver.schmidt@vw.com];  
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brian.fitzgerald@daimler.com[brian.fitzgerald@daimler.com];  
gbuffali@volvocars.com[gbuffali@volvocars.com]; ml90@chrysler.com[ml90@chrysler.com];  
tfagerma@ford.com[tfagerma@ford.com]; randall.c.harvey@gm.com[randall.c.harvey@gm.com]; David  
Geiger[david.geiger@porsche.us]; walter.lewis@porsche.us[walter.lewis@porsche.us];  
luis.hernandez@suz.com[luis.hernandez@suz.com]; Tony D'Ambrosi[adambrosi@hatci.com];  
Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]; French, Roberts[french.roberts@epa.gov]; Wehrly,  
Linc[wehrly.linc@epa.gov]; Wright, DavidA[Wright.DavidA@epa.gov]; Snyder, Jim[Snyder.Jim@epa.gov];  
Ball, Joel[ball.joel@epa.gov]; Anderson, Tom[Anderson.Tom@epa.gov]; Dalton,  
Joel[Dalton.Joel@epa.gov]; Ott, William[ott.william@epa.gov]  
**From:** Good, David  
**Sent:** Fri 1/31/2014 6:37:05 PM  
**Subject:** RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify  
database; Verify changes, etc.

To all manufacturers IUVP contacts,

Please note that in Verify Release 13.1 (deployed Jan 24, 2014) that EPA has added two new Test Result/Emission Names which can be used in Verify's IUVP Module only. The new test result/emission names are "Combined CREE" and "Combined OPT-CREE."

Please begin using these IUVP emission names as soon as possible (and don't use the work-around method of entering IUVP combined CREE/OCREE data). [Thanks much for using the "work-around" method of entering combined CREE IUVP data over the past few months.] If you used the "work-around method" of entering CREE/OCREE data, it is not necessary to correct previously entered IUVP data using the new test result/emission names.



Please enter the appropriate Combined CREE or Combined OPT-CREE test results along with the appropriate Combined CREE or Combined OPT-CREE in-use standard, pass/fail results, etc. for the highway test only. As a reminder, individual in-use GHG standards for specific in-use vehicles are required to be included in the manufacturer's final CAFE/GHG model year report, ref. 40 CFR 86.1818-12(d); and 40 CFR 600.512-12(c)(11).

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Tips for entering IUVP data:

1. Please enter Combined CREE or Combined OPT-CREE test results (weighted 55% city and 45% highway) for the highway test procedure only.
2. Please do not enter both Combined CREE and Combined OPT-CREE values. Enter either CREE or OPT-CREE values which are consistent with the way you submitted data in your CAFE/GHG model year report for the applicable model year.
3. Please enter CH4 test results, standards, pass/fail results on the FTP test only.
4. Please enter N2O test results, standards, pass/fail results on the FTP test only if you actually measured N2O---e.g. don't enter the default 0.010 N2O values.

Reminders:

1. 2012 IUVP low mileage testing was required to be completed by Dec 31, 2013 and data submitted to EPA's Verify database prior to Jan 31, 2014, ref. 40 CFR 86.1845-04(b)(4) and 86.1847(b). EPA has extended the window in Verify to Feb 28, 2014 for reporting and correcting 2012 model year low mileage IUVP test data. Please contact Bill Pidgeon by email or at 734-214-4416 if you need to submit data to Verify after that date.
2. When entering IUVP data in Verify, please check your Verify mailbox to make sure that

the data was accepted by Verify.

Thanks much.

Please call contact me at 734-214-4450 or by email if you have any questions.

Dave

**To:** Good, David[good.david@epa.gov]  
**From:** Schmidt, Oliver (EEO)  
**Sent:** Fri 1/31/2014 6:37:10 PM  
**Subject:** Automatic reply: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc.

Hello,

thank you for your mail.  
I am on a business trip with limited access to email.

Oliver Schmidt

**To:** mb-nathan-hinderer [nathan.hinderer@daimler.com];  
william.meschievitz@tema.toyota.com[william.meschievitz@tema.toyota.com];  
tommy\_chang@ahm.honda.com[tommy\_chang@ahm.honda.com];  
JRugge@subaru.com[JRugge@subaru.com]; nokawa@mazdausa.com[nokawa@mazdausa.com];  
dennis.pawlak@na.mitsubishi-motors.com[dennis.pawlak@na.mitsubishi-motors.com];  
KhanF@NRD.NISSAN-USA.COM[KhanF@NRD.NISSAN-USA.COM]; Tobias Glas[tobias.glas@vw.com];  
Peace O Uwague[peace.ouwague@bmwnaext.com]; rds116@chrysler.com[rds116@chrysler.com];  
ghall12@jaguarlandrover.com[ghall12@jaguarlandrover.com];  
rbarre20@volvocars.com[rbarre20@volvocars.com]; Beth Borland [bab11@chrysler.com]; Mark M  
Poll[mpoll1@ford.com]; christopher.cislo@gm.com[christopher.cislo@gm.com];  
ross.gatzke@porsche.us[ross.gatzke@porsche.us]; balsip@suz.com[balsip@suz.com]; Lindsey  
Jeng[ljeng@hatci.com]  
**Cc:** Dave Barker[dba1@subaru.com];  
peter\_meier@ahm.honda.com[peter\_meier@ahm.honda.com];  
tom.beierschmitt@tema.toyota.com[tom.beierschmitt@tema.toyota.com];  
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tfagerma@ford.com[tfagerma@ford.com]; randall.c.harvey@gm.com[randall.c.harvey@gm.com]; David  
Geiger[david.geiger@porsche.us]; walter.lewis@porsche.us[walter.lewis@porsche.us];  
luis.hernandez@suz.com[luis.hernandez@suz.com]; Tony D'Ambrosi[adambrosi@hatci.com];  
Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]; French, Roberts[french.roberts@epa.gov]; Wehrly,  
Linc[wehrly.linc@epa.gov]; Wright, DavidA[Wright.DavidA@epa.gov]; Snyder, Jim[Snyder.Jim@epa.gov];  
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Joel[Dalton.Joel@epa.gov]; Ott, William[ott.william@epa.gov]  
**From:** Good, David  
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the data was accepted by Verify.

Thanks much.

Please call contact me at 734-214-4450 or by email if you have any questions.

Dave

**To:** Good, David[good.david@epa.gov]  
**Cc:** Cassie Pogoda (TEMA TTC)[cassandra.pogoda@tema.toyota.com]; Tom Beierschmitt (TEMA TTC)[tom.beierschmitt@tema.toyota.com]; Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Will Meschievitz (TEMA TTC)  
**Sent:** Fri 1/31/2014 7:27:10 PM  
**Subject:** RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc.

Hi Dave,

Thank you for the information/direction on IUVP data entry.

Just for your reference, Toyota's main contact for IUVP testing and data entry is Cassie Pogoda.

Of course Tom Beierschmitt remains Toyota's main contact for In-Use related matters.

Best regards,

Will

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Friday, January 31, 2014 1:37 PM  
**To:** mb-nathan-hinderer ; Will Meschievitz (TEMA TTC); tommy\_chang@ahm.honda.com; JRugge@subaru.com; nokawa@mazdausa.com; dennis.pawlak@na.mitsubishi-motors.com; KhanF@NRD.NISSAN-USA.COM; Tobias Glas; Peace O Uwague; rds116@chrysler.com; ghall12@jaguarlandrover.com; rbarre20@volvocars.com; Beth Borland ; Mark M Poll; christopher.cislo@gm.com; ross.gatzke@porsche.us; balsip@suz.com; Lindsey Jeng  
**Cc:** Dave Barker; peter\_meier@ahm.honda.com; Tom Beierschmitt (TEMA TTC); drobertson@mazdausa.com; david.patterson@na.mitsubishi-motors.com; yamadaya@ntcna.nissan-usa.com; oliver.schmidt@vw.com; Andrea.Antholzner@bmwna.com; vvarjabe@jaguar.com; vvarjabe@jaguarlandrover.com; brian.fitzgerald@daimler.com; gbuffali@volvocars.com; ml90@chrysler.com; tfagerma@ford.com; randall.c.harvey@gm.com; David Geiger; walter.lewis@porsche.us; luis.hernandez@suz.com; Tony D'Ambrosi; Peavyhouse, Robert; French, Roberts; Wehrly, Linc; Wright, DavidA; Snyder, Jim; Ball, Joel; Anderson, Tom; Dalton, Joel; Ott, William  
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CREE or OPT-CREE values which are consistent with the way you submitted data in your CAFE/GHG model year report for the applicable model year.

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Thanks much.

Please call contact me at 734-214-4450 or by email if you have any questions.

Dave

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Glas, Tobias  
**Sent:** Fri 1/31/2014 9:30:22 PM  
**Subject:** Common Section

Hi Jim !

We are looking for road coefficients for a Mercedes Sprinter. Is it possible to get the Mercedes Common Sections for My 2014 from you ?

Have a nice weekend!

**Tobias Glas**

In-Use Emission Compliance Specialist

Engineering & Environmental Office

Volkswagen Group of America, Inc.

3800 Hamlin Road

Auburn Hills, MI 48326

United States of America

Phone: (248) 754-4211

Cell: (248) 494-1537

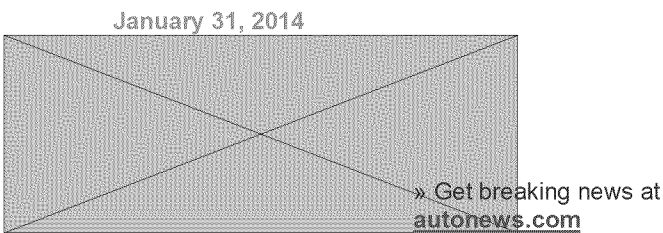
Fax: (248) 754-4207

E-Mail: [Tobias.Glas@vw.com](mailto:Tobias.Glas@vw.com)

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Fri 1/31/2014 9:36:15 PM  
**Subject:** DAILY: Subaru Legacy, Kia Soul among Chicago show debuts | 2 former Diamond Electric execs to plead guilty to price-fixing | Fiat Chrysler plans 3 Super Bowl ads

Today's most read story

**Toyota tells N.A. dealers to stop selling 8 models for possible fire risk**



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#### TOP NEWS

### **CHICAGO AUTO SHOW PREVIEW** **Subaru Legacy, Kia Soul EV and** **Chevy's Transit Connect fighter set** **to debut in Chicago**

8:16 am U.S. ET | Jan 31

Subaru's redesigned Legacy sedan, Kia's Soul EV, Chevrolet's new Nissan-built small commercial van and two high-performance Volvos highlight the world debuts this week at the Chicago Auto Show. ... » [READ](#)

### **2 former Diamond Electric execs to** **plead guilty in price-fixing scheme**

UPDATED: 1/31/14 1:53 pm ET - adds details

12:51 pm U.S. ET | Jan 31

Two former senior-level executives with Japanese supplier Diamond Electric Manufacturing have agreed to plead guilty to felony charges in the ongoing global auto parts price-fixing investigation, the Department of Justice said today. ... » [READ](#)

### **Fiat Chrysler plans 3 Super Bowl** **ads**

2:46 pm U.S. ET | Jan 31

Fiat Chrysler Automobiles said today it will broadcast

three commercials during the Super Bowl on Sunday. The spots will run in the first commercial break of the first quarter, during halftime and during the final commercial break of the third quarter. ... » [READ](#)

## **Honda quarterly profit more than doubles to \$1.56 billion**

4:33 am U.S. ET | Jan 31

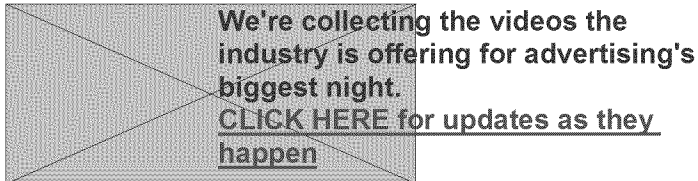
Honda said its October-December net profit more than doubled to \$1.56 billion, back to pre-Lehman crisis levels, helped by strong sales of the redesigned Fit subcompact. ... » [READ](#)

## **Mexico surpassing Japan as No. 2 exporter of light vehicles to U.S.**

UPDATED: 1/31/14 2:35 pm ET

12:49 pm U.S. ET | Jan 31

Japan has ranked among the top two auto exporters to the United States since the 1970s, shipping Toyotas, Hondas and Nissans more than 5,000 miles across the Pacific. ... » [READ](#)



### **ON THE BLOGS**

**HANS GREIMEL**

**Behind the wheel of Nissan's taxi of tomorrow**

» [READ](#)

**DAVID BARKHOLZ**

**Dealers radiate resolve, not complacency, at NADA**

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### **MOST READ (Last 7 days)**

» **Toyota tells N.A. dealers to stop selling 8 models for possible fire risk**

» **Maserati boom signals Fiat saying 'arrivederci' to its Italian past**

» Ford's store, company employees will buzz about Bowl spot  
» AutoNation's Jackson calls 2013 a 'perfect year'  
» BMW will end Mini production at Magna Steyr in 2016, report says

**Hyundai promotes Pradzinski to U.S. sales chief**

3:59 pm U.S. ET | Jan 31

**Mitsubishi to shuffle top management, report says**

UPDATED: 1/30/14 9:42 pm ET  
9:29 pm U.S. ET | Jan 30

**UAW's Holiefield on leave from union**

4:05 pm U.S. ET | Jan 31

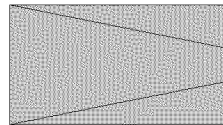
**Renault-Nissan raises savings targets in cooperation push**

12:08 pm U.S. ET | Jan 30

**BMW i3 buyers face six-month wait for their cars**

12:01 am U.S. ET | Jan 31

**VW offers former Mercedes**



» 2/6 - The Road to the Sale by

MAX

» 2/11 - Mobile Shoppers by

Cars.com

» April 7, 2014 -

PACE Awards

» May 14 -

Marketing Seminar

Los Angeles

» June 3, 2014 -

Rising Stars

» June 4, 2014 -

ANE Congress

**exec Renschler big budget to  
be trucks chief, report says**

5:22 am U.S. ET | Jan 31

**Daimler is open to further  
Renault-Nissan cooperation,  
projects with Tesla**

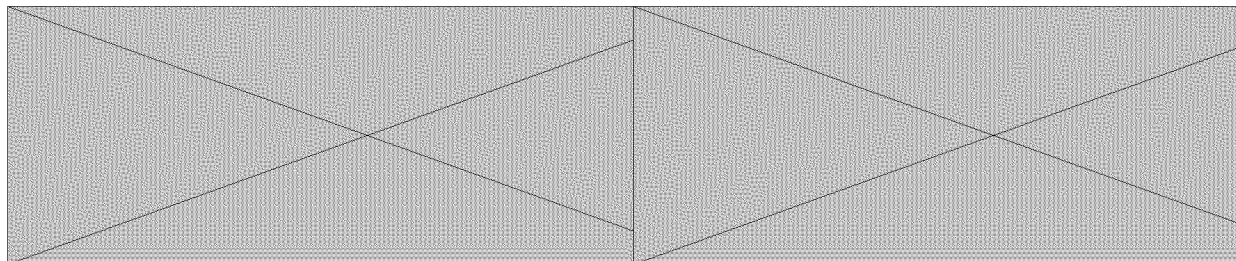
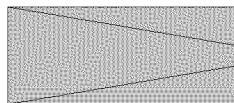
4:23 am U.S. ET | Jan 31

**Lear adjusted income drops  
11% in Q4**

3:24 pm U.S. ET | Jan 31

**Tenneco posts profit gains for  
Q4 and 2013**

3:14 pm U.S. ET | Jan 31



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..

**To:** Good, David [good.david@epa.gov]  
**From:** Ex. 7  
**Sent:** Fri 1/31/2014 9:37:55 PM  
**Subject:** RE: RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc. - Forwarded to CARB

Dave, based on the very cold weather you've had, I can see how 30F would seem balmy. You probably know that we're having the opposite problem out here with very warm (for January) weather in the mid-80's and a drought. This week, we've started getting into the high 60's – brrrr, we have to wear a light jacket.

And thx for the info below; if we could still get a conf call with you next week, that would be nice. We'll aim to keep it about an hour.

Ex. 7

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Friday, January 31, 2014 12:57 PM  
**To:** Ex. 7  
**Cc:** Ex. 7  
**Subject:** FW: RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc. - Forwarded to CARB

Ex. 7 & all,

I forgot to cc you folks on this IUVP email.

Sorry

Today it was 30 deg F when I drove to work----a heat wave. For the last two weeks it has been hovering around zero deg F. Two days it was -9 and -11 when I drove to work at 9 AM. I'm glad January is almost over.

Dave

**From:** Good, David

**Sent:** Friday, January 31, 2014 1:37 PM

**To:** mb-nathan-hinderer ; 'william.meschievitz@tema.toyota.com'; 'tommy\_chang@ahm.honda.com'; 'JRugge@subaru.com'; 'nokawa@mazdausa.com'; 'dennis.pawlak@na.mitsubishi-motors.com'; 'KhanF@NRD.NISSAN-USA.COM'; 'Tobias Glas'; 'Peace O Uwague'; 'rds116@chrysler.com'; 'ghall12@jaguarlandrover.com'; 'rbarre20@volvocars.com'; 'Beth Borland '; 'Mark M Poll'; 'christopher.cislo@gm.com'; 'ross.gatzke@porsche.us'; 'balsip@suz.com'; 'Lindsey Jeng'

**Cc:** 'Dave Barker'; 'peter\_meier@ahm.honda.com'; 'tom.beierschmitt@tema.toyota.com'; 'drobertson@mazdausa.com'; [david.patterson@na.mitsubishi-motors.com](mailto:david.patterson@na.mitsubishi-motors.com); 'yamaday@ntcna.nissan-usa.com'; 'oliver.schmidt@vw.com'; 'Andrea.Antholzner@bmwna.com'; 'vvarjabe@jaguar.com'; 'vvarjabe@jaguarlandrover.com'; 'brian.fitzgerald@daimler.com'; 'gbuffali@volvocars.com'; 'ml90@chrysler.com'; 'tfagerma@ford.com'; 'randall.c.harvey@gm.com'; 'David Geiger'; 'walter.lewis@porsche.us'; 'luis.hernandez@suz.com'; Tony D'Ambrosi; Peavyhouse, Robert; French, Roberts; Wehrly, Linc; Wright, DavidA; Snyder, Jim; Ball, Joel; Anderson, Tom; Dalton, Joel; Ott, William  
**Subject:** RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc.

To all manufacturers IUVP contacts,

Please note that in Verify Release 13.1 (deployed Jan 24, 2014) that EPA has added two new Test Result/Emission Names which can be used in Verify's IUVP Module only. The new test result/emission names are "Combined CREE" and "Combined OPT-CREE."

Please begin using these IUVP emission names as soon as possible (and don't use the work-



around method of entering IUVP combined CREE/OCREE data). [Thanks much for using the “work-around” method of entering combined CREE IUVP data over the past few months.] If you used the “work-around method” of entering CREE/OCREE data, it is not necessary to correct previously entered IUVP data using the new test result/emission names.

Please enter the appropriate Combined CREE or Combined OPT-CREE test results along with the appropriate Combined CREE or Combined OPT-CREE in-use standard, pass/fail results, etc. for the highway test only. As a reminder, individual in-use GHG standards for specific in-use vehicles are required to be included in the manufacturer’s final CAFE/GHG model year report, ref. 40 CFR 86.1818-12(d); and 40 CFR 600.512-12(c)(11).

As of the first week in January, 2014, some manufacturers have not been entering CREE/OCREE data and/or CH4 data into Verify for 2012 IUVP tests. In addition, some manufacturers seem to be missing 2012 low mileage IUVP data for some of their 2012 test groups. Please double check on the status of your 2012 IUVP program and let Bill Pidgeon ([pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)) and I know if your program is running late. I will try to send manufacturers with missing data a follow-up email message in the next few days.

Tips for entering IUVP data:

1. Please enter Combined CREE or Combined OPT-CREE test results (weighted 55% city and 45% highway) for the highway test procedure only.
2. Please do not enter both Combined CREE and Combined OPT-CREE values. Enter either CREE or OPT-CREE values which are consistent with the way you submitted data in your CAFE/GHG model year report for the applicable model year.
3. Please enter CH4 test results, standards, pass/fail results on the FTP test only.
4. Please enter N2O test results, standards, pass/fail results on the FTP test only if you actually measured N2O---e.g. don’t enter the default 0.010 N2O values.

Reminders:

1. 2012 IUVP low mileage testing was required to be completed by Dec 31, 2013 and data submitted to EPA’s Verify database prior to Jan 31, 2014, ref. 40 CFR 86.1845-04(b)(4) and

86.1847(b). EPA has extended the window in Verify to Feb 28, 2014 for reporting and correcting 2012 model year low mileage IUVP test data. Please contact Bill Pidgeon by email or at 734-214-4416 if you need to submit data to Verify after that date.

2. When entering IUVP data in Verify, please check your Verify mailbox to make sure that the data was accepted by Verify.

Thanks much.

Please call contact me at 734-214-4450 or by email if you have any questions.

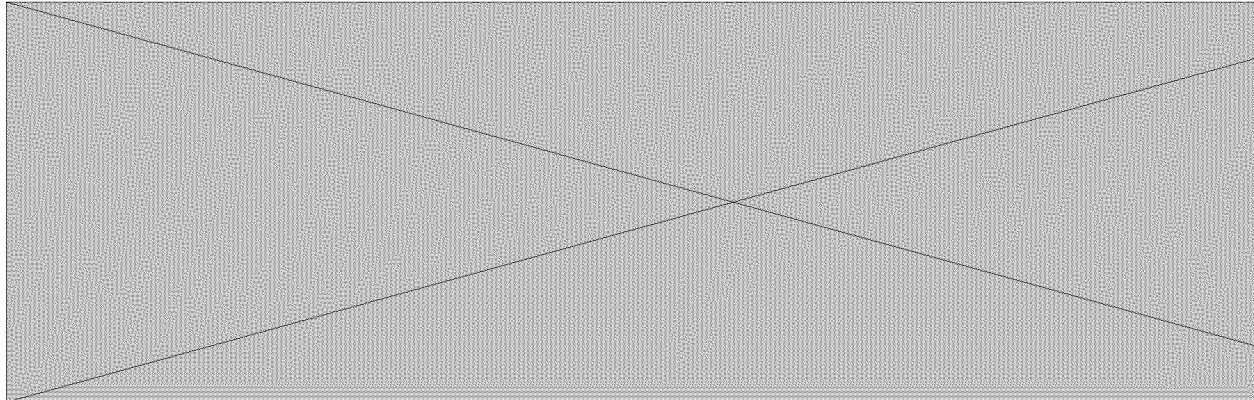
Dave

**From:** Kaul, Meetu  
**Importance:** Normal  
**Subject:** Defeat Device  
**Start Date/Time:** Mon 2/3/2014 5:30:00 PM  
**End Date/Time:** Mon 2/3/2014 6:00:00 PM

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 2/3/2014 3:17:28 PM  
**Subject:** SUPER BOWL ADS: Amid rout, automakers tackle their brand challenges

February 3, 2014

[Click here to open this newsletter in a Web browser](#)



**This year's big game was another big deal for the automotive world. We've collected all of the commercials from the industry's biggest advertising night below, along with in-depth coverage from our reporting team. Read more at [autonews.com/superbowl](http://autonews.com/superbowl).**

[Final Audi Super Bowl ad, "Doberhuahua"](#)

[CarMax Super Bowl ad extended cut](#)

[Final Chevrolet Super Bowl ad, "Life"](#)

[The 2015 Chevrolet Silverado: "Romance"  
Super Bowl ad](#)

[Final Chrysler Super Bowl ad, "America's  
Import"](#)

[Final Jeep Super Bowl ad, "Restlessness"](#)

[Final Maserati Super Bowl ad, "Strike"](#)

[Final Ford Super Bowl ad, "Nearly Double"](#)

[Final Honda Super Bowl ad, "Hugfest"](#)

[Final Honda Super Bowl ad, "Hugs"](#)

[Final Hyundai Super Bowl ad, "Dad's Sixth  
Sense"](#)

[Final Hyundai Super Bowl ad, "Nice"](#)

[Kia final Super Bowl ad "The Truth"](#)

[Jaguar "Rendezvous" Super Bowl final ad](#)

[Toyota Highlander Super Bowl final ad](#)  
[Volkswagen final Super Bowl ad, "Wings"](#)

[2014 SUPER BOWL ADS](#)  
[Amid Super Bowl rout,](#)  
[automakers tackle their brand](#)  
[challenges](#)

9:07 pm U.S. ET | Feb. 2 2014

This year's crop of Super Bowl ads, and the dollars spent on them during Seattle's 43-8 rout of Denver, spotlighted the unique challenges some automakers face in realigning their brand images with their expanding product portfolios. It also illustrated the divergent strategies they are using to build and maintain buzz around their big-budget marketing bets. ... » [READ](#)

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Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207

**To:** Good, David[good.david@epa.gov]  
**Cc:** Harry.Thompson@dot.gov[Harry.Thompson@dot.gov]  
**From:** Terry.Anderson@dot.gov  
**Sent:** Mon 2/3/2014 3:17:36 PM  
**Subject:** RE: NHTSA Definition of an Automobile for FE Labels/CAFE and GHG

Dave,

We are gathering information from those involved with writing the rule. I hope to have a response ready for you by Wednesday.

Terry

Also, VW/Porsche did not agree with our decision to combine their MY 2012 fleets. I will update you when we (NHTSA) decide how to respond.

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Thursday, January 30, 2014 6:28 PM  
**To:** Thompson, Harry (NHTSA)  
**Cc:** Anderson, Terry (NHTSA); Ott, William; Anderson, Tom  
**Subject:** FW: NHTSA Definition of an Automobile for FE Labels/CAFE and GHG

Harry or Terry,

Please let me know how to interpret the 10,000 requirement in the provisions of 49 CFR 523.3. [I think the 10,000 requirement is new within the last 5 years or so---so there must be some preamble language to explain the background of why it was added.]

Does that paragraph mean that limo manufacturers, Roush (who is the final stage manufacturer for some current hot rod Ford cars and trucks) and other "final stage manufacturers" don't have to comply with CAFE requirements if they don't exceed 10,000 units?

See the forwarded email message below.

Thanks

**From:** Anderson, Tom  
**Sent:** Thursday, January 30, 2014 2:58 PM  
**To:** Good, David  
**Subject:** NHTSA Definition of an Automobile for FE Labels/CAFE and GHG

DAVE,

Below is the NHTSA reg reference that William was referencing in our earlier discussion. Please send the question on the final stage manufacturer question to NHTSA (i.e. is a final stage manufacturer responsible for FE labels/CAFÉ and GHG if they produce 10,000 or less vehicles – this is what our interpretation of these regs??).

**Authority:** 49 U.S.C. 32901, delegation of authority at 49 CFR 1.50.

§ 523.3 Automobile.

**(a) An automobile is any 4-wheeled vehicle that is propelled by fuel, or by alternative fuel, manufactured primarily for use on public streets, roads, and highways and rated at less than 10,000 pounds gross vehicle weight, except:**

**(1) A vehicle operated only on a rail line;**

**(2) A vehicle manufactured in different stages by 2 or more manufacturers, if no intermediate or final-stage manufacturer of that vehicle manufactures more than 10,000 multi-stage vehicles per year; or**

**(3) A work truck.**

**(b) The following vehicles rated at more than 6,000 pounds and less than 10,000 pounds gross vehicle weight are determined to be automobiles:**

(1) Vehicles which would satisfy the criteria in §523.4 (relating to passenger automobiles) but for their gross vehicle weight rating.

(2) Vehicles which would satisfy the criteria in §523.5 (relating to light trucks) but for their gross vehicle weight rating, and which

(i) Have a basic vehicle frontal area of 45 square feet or less,

(ii) Have a curb weight of 6,000 pounds or less,

(iii) Have a gross vehicle weight rating of 8,500 pounds or less, and

(iv) Are manufactured during the 1980 model year or thereafter.

(3) Vehicles that are defined as medium duty passenger vehicles, and which are manufactured during the 2011 model year or thereafter.

(Sec. 9, Pub. L. 89-670, 80 Stat. 981 (49 U.S.C. 1657); sec. 301, Pub. L. 94-163, 89 Stat. 901 (15 U.S.C. 2002); delegation of authority at 41 FR 25015, June 22, 1976)

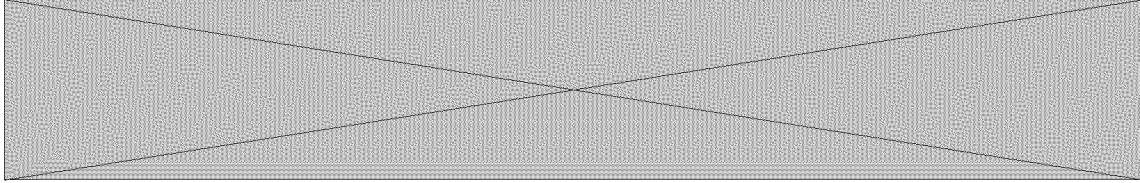
[42 FR 38362, July 28, 1977, as amended at 43 FR 12013, Mar. 23, 1978; 44 FR 4493, Jan. 2, 1979; 71 FR 17676, Apr. 6, 2006; 74 FR 14449, Mar. 30, 2009]

Tom



**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Mon 2/3/2014 5:03:39 PM  
**Subject:** Green Car Report Daily Headlines

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The latest from your friends at GCR:

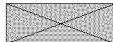
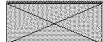
## January Electric-Car Sales, Fuel Cells In The cold, VW Beetle 65 Years: Today's Car News

Feb 03, 2014 04:40 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



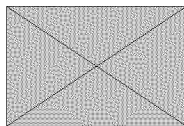
Today on Green Car Reports: The January 2014 plug-in electric car sales numbers are in, a preview of the green cars and concepts of the 2014 Chicago Auto Show, and the Volkswagen Beetle celebrates 65 years in the United States. All this and more on Green Car Reports. The Formula E electric-car racing series launches this September, but how does it...

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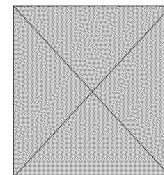
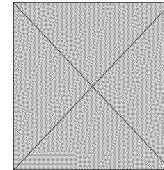
## Green Car Reports, Five Years And 9,800 Articles Later

Feb 03, 2014 04:56 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



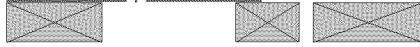
Five years ago today, Green Car Reports began a daily publishing schedule, producing articles on fuel efficiency, hybrids, and the plug-in electric cars that were then still two years away from the market. Think back February 2009, when the Tesla Roadster was the sole

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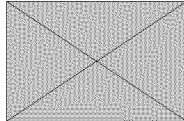
modern battery-electric car available in any volume—at a price of \$109,000...

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## Plug-In Electric Car Sales In January: Leaf, Volt Both Low

Feb 03, 2014 02:56 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



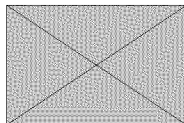
In the first month of 2014, sales of the two most popular plug-in electric cars were lower than they've been in many months. Sales levels likely fell victim both to the predictable winter slowdown in electric-car sales (which we saw in 2012 and 2013 too) and to particularly bad weather last month throughout much of the U.S. MORE: FINAL UPDATE...

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## Toyota Touts Cold-Weather Performance Of Hydrogen Fuel Cells

Feb 03, 2014 02:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



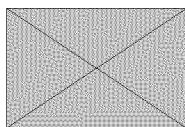
How did you fare in the Snowpocalypse? The recent polar vortex over the North American continent dumped heavy snow on dozens of states and brought in truly Arctic temperatures, causing widespread travel disruption. While Toyota's hydrogen fuel cell vehicles aren't immune to snow-bound traffic, they are at least suffering no ill-effects from the...

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## Electric Cars Cut Greenhouse Gases Even More Than Expected, NASA Says

Feb 03, 2014 01:20 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



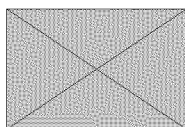
A trial program with electric cars at the Kennedy Space Center is going better than expected, cutting greenhouse gas emissions in company vehicles. In fact, the center's sustainability office suggests the results are 10 times better than those expected--electric cars are making a real impact on-site. According to redOrbit, the Kennedy Space Center...

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## 2014 Chicago Auto Show: Green-Car Preview

Feb 03, 2014 12:40 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



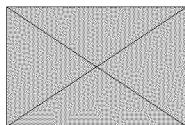
Chicago isn't as big as some annual auto shows, and at this year's show green vehicles are a little thin on the ground--March's Geneva Motor Show will provide more to that effect. Nevertheless there are a few significant vehicles set to appear in Chicago, so we've pieced together a green car preview to bring you the latest details. This year's...

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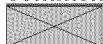
## New TurboCord Electric-Car Charging Cord Can Use 120 Or 240 Volts

Feb 03, 2014 12:20 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



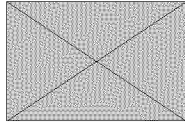
Electric car owners may not have to get their hands dirty at gas stations, but they do have to carry around an extra essential item not found in their internal combustion counterparts--a charging cord. This is little hardship of course, provided your car has somewhere to store it. But depending on where you charge, or what voltage you charge at...

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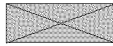
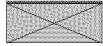
## VW Beetle Celebrates 65 Years In U.S. (With A Few Missing)

Feb 03, 2014 12:03 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



Raise a glass to the simple, classic, iconic Volkswagen Beetle, which is celebrating its 65th year in the United States. Well, almost. The first Beetle to reach U.S. shores was imported by Dutch businessman Ben Pon Sr.--the world's first official Volkswagen importer--and shipped to New York City in January 1949. Despite a hunger for cars--any kind...

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**To:** Wick, Anne[Wick.Anne@epa.gov]; Kaul, Meetu[Kaul.Meetu@epa.gov]; Choi, Jake[Choi.Jake@epa.gov]  
**From:** Miller, Anthony  
**Sent:** Mon 2/3/2014 5:37:43 PM  
**Subject:** RE: Defeat Device Penalty Policy

**Webconference URL:**

## Non-Responsive

-----Original Appointment-----

**From:** Miller, Anthony  
**Sent:** Tuesday, January 28, 2014 11:15 AM  
**To:** Miller, Anthony; Wick, Anne; Kaul, Meetu; Choi, Jake  
**Subject:** Defeat Device Penalty Policy  
**When:** Monday, February 03, 2014 11:00 AM-12:00 PM (UTC-07:00) Mountain Time (US & Canada).  
**Where:**

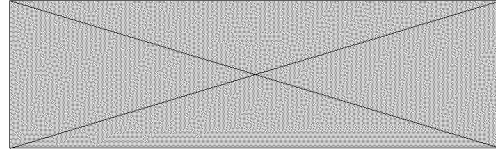
**From:** Wick, Anne  
**Required Attendees:** Klepp, Robert; Miller, Anthony; Choi, Jake; Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
**Subject:** Defeat Device penalty framework discussion  
**Start Date/Time:** Mon 2/10/2014 9:00:00 PM  
**End Date/Time:** Mon 2/10/2014 10:00:00 PM

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 2/3/2014 9:21:47 PM  
**Subject:** P.M. NEWSCAST: VW workers in Tenn. to vote on UAW | Mandatory 'talking cars'? | Sergio on Dylan ad | Subaru sales sizzle, weather stops many rivals cold

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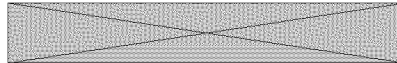
**February 3, 2014**



**[UAW plans vote at VW »](#)**

**[Mandatory 'talking cars'? »](#)**

**[January U.S. sales fall »](#)**



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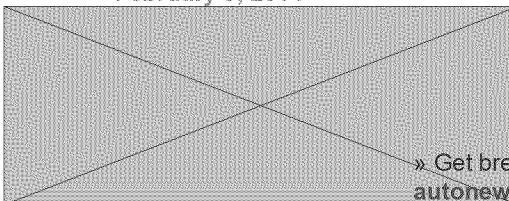
..

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 2/3/2014 9:49:21 PM  
**Subject:** DAILY: U.S. sales skid 3%; SAAR flat at 15.2 million | Toyota tops in U.S. recalls in 2013 | Toyota's \$40B in cash draws calls for more plants, dividends | Make GM whole again with Pontiac dust

Today's most read story

**Polar vortex puts chill in January  
U.S. auto sales**

February 3, 2014



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#### TOP NEWS

##### **JANUARY U.S. AUTO SALES**

##### **U.S. sales skid 3% as weather takes toll; SAAR flat at 15.2 million units**

UPDATED: 2/3/14 4:25 pm ET

8:00 am U.S. ET | Feb 3

U.S. light-vehicle sales, dampened by lower fleet shipments and severe winter weather across large chunks of the country, fell 3 percent in January. Among the biggest automakers, Nissan Motor and Chrysler Group posted solid gains while volume fell at GM, Ford, Toyota and Honda. And the Nissan brand edged rival

Honda. ... » [READ](#)

##### **Toyota leads in recalls again in 2013, with tally topping 5 million vehicles**

4:13 pm U.S. ET | Feb 3

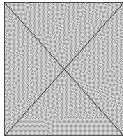
Automakers issued more recalls in 2013 than the year before, with Toyota once again recalling the most cars and trucks, a new government report shows. ...

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Darndest Things**





Your shoppers are spending more time online looking for a car than ever before. Why are you alienating them on your digital showroom with confusing banner ads, dreadful vehicle walk-arounds, and lousy emails? Learn how to always create a positive digital showroom experience with this complimentary eBook!

## **Toyota's \$40 billion cash pile draws calls for new plants, higher dividends**

2:20 pm U.S. ET | Feb 3

Toyota President Akio Toyoda, whose company has accumulated a cash pile of almost \$40 billion, is facing calls to put that money to better use. The world's largest carmaker is seeing profits surge as the yen weakens and demand rises in the United States and China. ...

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## **Toyota: Stop-sale order will have 'minimal' impact**

4:01 pm U.S. ET | Feb 3

A potential defect that is preventing Toyota dealers from selling some vehicles on their lots had little effect on January sales and is expected to have a "minimal" impact in February, company executives said today. ...

[» READ](#)

## **2014 SUPER BOWL ADS**

### **Amid Super Bowl rout, automakers tackle their brand challenges**

UPDATED: 2/3/14 11:24 am ET - adds more on Maserati ad

9:07 pm U.S. ET | Feb 2

This year's crop of Super Bowl ads, and the dollars spent on them during Seattle's 43-8 rout of Denver, spotlighted the unique challenges some automakers face in realigning their brand images with their expanding product portfolios. ... [» READ](#)

## **ON THE BLOGS**

**RICHARD TRUETT**

**Make GM whole again with some Pontiac dust**

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**DAVID BARKHOLZ**

**Bob Dylan hit with a fist, not flower**

[» READ](#)

## **MOST READ (Last 7 days)**

- » **Polar vortex puts chill in January U.S. auto sales**
- » **U.S. bobsledders get big push from BMW**
- » **Toyota gets its racing groove back**
- » **GM taps Sweeney to head Chevy sales for U.S., report says**
- » **Why VW picked outside agency for 'Wings' spot**

## **COLUMNS**

**KEITH CRAIN**

### **This is not a simple business anymore**

12:01 am U.S. ET | Feb 3

It hasn't been easy over the past decade or so to figure out what's a domestic vehicle and what's an import. And it's not getting any easier as more companies become multinationals. It probably doesn't matter anymore. ... » [READ](#)

### **U.S. regulators pave way for vehicle-to-vehicle communications, safety technology**

UPDATED: 2/3/14 2:43 pm ET - adds details  
8:29 am U.S. ET | Feb 3

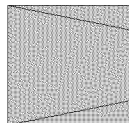
### **VW workers to vote on UAW representation at Tennessee plant**

UPDATED: 2/3/14 1:31 pm ET -- adds vote dates, statements  
1:10 pm U.S. ET | Feb 3

### **Opel reaches job guarantee deal with**

## **MULTIMEDIA**

» **Where the aluminum road will lead ...**



» **2/6 - The Road to the Sale by MAX**  
» **2/11 - Mobile Shoppers by Cars.com**

» **March 31, 2014 - Nominate Your Best Dealership**  
» **April 7,**

### **3 German factories**

2:05 pm U.S. ET | Feb 2

### **Chevy offers free Impala weekend drives for National renters**

12:01 am U.S. ET | Feb 1

### **GM taps Sweeney to head Chevy sales for U.S., report says**

12:34 am U.S. ET | Feb 1

### **Musk holds swagger in check after Tesla's wild ride in 2013**

12:01 am U.S. ET | Feb 1

### **Japanese throttle-body supplier to plead guilty to price fixing**

12:42 pm U.S. ET | Feb 3

### **Denso raises projection for annual profits by 5.6 percent**

10:30 am U.S. ET | Feb 3

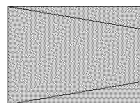
### **Canada report: Chrysler, Toyota auto sales up in January, Ford slides**

UPDATED: 2/3/14 2:04 pm ET - new story

12:29 pm U.S. ET | Feb 3

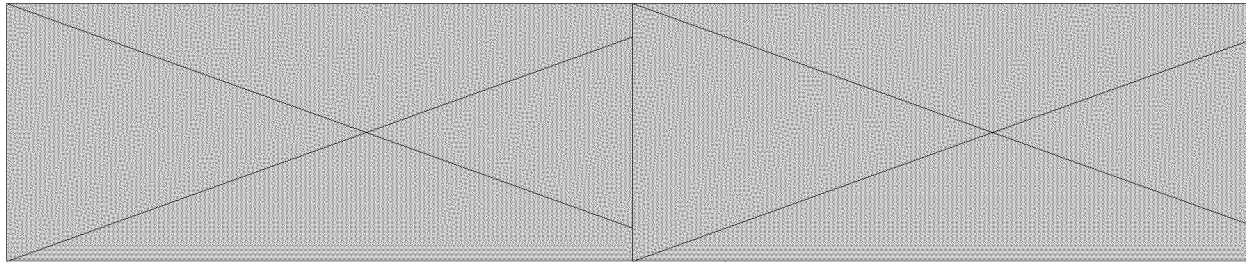
### **Mercedes takes U.S. luxury lead as entry level expands**

3:26 pm U.S. ET | Feb 3



**2014 -**  
**PACE**  
**Awards**  
**» May 14 -**  
**Marketing**  
**Seminar -**  
**Los**  
**Angeles**  
**» June 3,**  
**2014 -**  
**Rising**  
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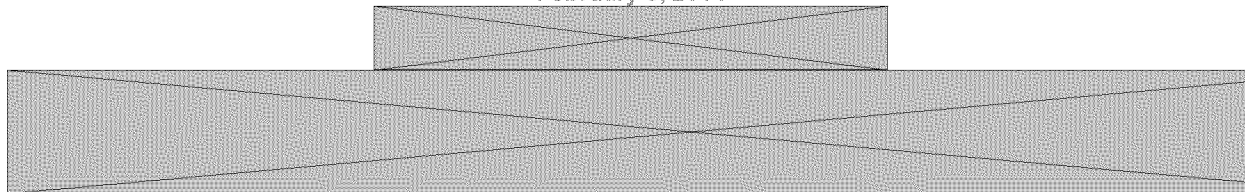


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**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 2/3/2014 11:21:16 PM  
**Subject:** U.S. SALES REPORT: January deliveries chilled by tax change, record snowfall and freeze

February 3, 2014



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## **U.S. sales chilled by tax change, January freeze**

4:38 pm U.S. ET | Feb 3

Frigid weather and weak fleet sales held January U.S. auto sales 3 percent below brisk year-ago volume. Automakers and dealers sold 1,011,187 light vehicles for the month. The seasonally adjusted annual selling rate was 15.2 million, virtually unchanged from last January, but down slightly from December's 15.4 million SAAR. ... » [READ](#)

## **Toyota: Stop-sale order will have 'minimal' impact**

4:01 pm U.S. ET | Feb 3

A potential defect that is preventing Toyota dealers from selling some vehicles on their lots had little effect on January sales and is expected to have a "minimal" impact in February, company executives said today. ... » [READ](#)

## **GM sales slide 12% on lower fleet, retail volume**

4:02 pm U.S. ET | Feb 3

## **Nissan tops Honda, gains 10% as Rogue stars**

4:09 pm U.S. ET | Feb 3

## **Honda deliveries fall 2% as cold, snow dent East, Midwest strongholds**

5:03 pm U.S. ET | Feb 3

## **Ford drops 8%; bad weather hits key regions**

3:00 pm U.S. ET | Feb 3

## **Chrysler volume rises 8% on SUVs, pickups**

### **ON THE BLOGS**

[JESSE SNYDER](#)

**Cold spells, snowfalls, a fluke and an asterisk**

[NICK BUNKLEY](#)

**GM lets a convoluted statement do all the talking**

3:03 pm U.S. ET | Feb 3

» [READ](#)

## Canadian auto sales nudge slightly higher

12:29 pm U.S. ET | Feb 3

## Mercedes takes U.S. luxury lead as entry level expands

3:26 pm U.S. ET | Feb 3

## U.S. sales skid 3% as weather takes toll; SAAR flat at 15.2 million units

8:00 am U.S. ET | Feb 3

### WINNERS AND LOSERS

% change in sales among brands from January 2013

Winners			Losers		
		Jan.			Jan.
1	Maserati	229.7%	1	Mini	-30.9%
2	Lincoln	42.5%	2	Volvo	-22.2%
3	Jeep	38.2%	3	Dodge	-19.3%
4	Jaguar	30.9%	4	Volkswagen division	-19.0%
5	Fiat	28.7%	5	Scion	-18.0%

### Top Selling Light Vehicles

	Jan. 2014
1 Ford F series	46,536
2 Chevrolet Silverado	28,926
3 Ram	25,071
4 Toyota Camry	23,332
5 Toyota Corolla/ Matrix	22,753
6 Nissan Altima	22,515
7 Honda Civic	21,824
8 Ford Fusion	20,717
9 Honda Accord	20,604
10 Ford Escape	19,459

### Top Selling Cars

	Jan. 2014	Jan.
1 Toyota Camry	23,332	
2 Toyota Corolla/ Matrix	22,753	
3 Nissan Altima	22,515	
4 Honda Civic	21,824	
5 Ford Fusion	20,717	Jeep Grand
6 Honda Accord	20,604	
7 Chevrolet Cruze	16,828	

8

9 Toyota Prius 12,205

10 Ford Focus 12,003 Top Selling Light Trucks

	2014
1 Ford F series	46,536
2 Chevrolet Silverado	28,926
3 Ram	25,071
4 Ford Escape	19,459
5 Honda CR-V	18,232
6 Toyota RAV4	16,880
7 Chevrolet Equinox	14,547
8 Nissan Rogue	13,831
9 Ford Explorer	12,810
10 Cherokee	12,207

Table sorted by year-to-date sales

	Jan. 2014	Jan. 2013	% change
Buick	13,278	13,463	-1%
Cadillac	11,386	13,116	-13%
Chevrolet	119,089	137,304	-13%
GMC	27,733	30,816	-10%
General Motors	<b>171,486</b>	<b>194,699</b>	<b>-12%</b>
Ford division	147,521	161,672	-9%
Lincoln	5,973	4,191	43%
Ford Motor Co.	<b>153,494</b>	<b>165,863</b>	<b>-8%</b>
Lexus	17,637	16,211	9%
Scion	4,011	4,893	-18%
Toyota Division	124,717	136,621	-9%
Toyota/Scion	128,728	141,514	-9%
Toyota Motor Sales	<b>146,365</b>	<b>157,725</b>	<b>-7%</b>
Chrysler Division	21,113	20,696	2%
Dodge	34,905	43,227	-19%
Ram	26,033	20,987	24%
Dodge/Ram	60,938	64,214	-5%
Fiat	3,222	2,503	29%
Jeep	41,910	30,318	38%
Chrysler Group†	<b>127,183</b>	<b>117,731</b>	<b>8%</b>
Acura	10,823	9,489	14%
Honda Division	80,808	84,137	-4%
American Honda Motor Co.	<b>91,631</b>	<b>93,626</b>	<b>-2%</b>
Infiniti	8,998	7,126	26%
Nissan Division	81,472	73,793	10%
Nissan North America	<b>90,470</b>	<b>80,919</b>	<b>12%</b>
Hyundai division	44,005	43,713	1%
Kia	37,011	36,302	2%
Hyundai-Kia	<b>81,016</b>	<b>80,015</b>	<b>1%</b>
Audi	10,101	10,056	0%
Bentley	192	188	2%
Lamborghini*	47	46	2%
Porsche	3,096	3,358	-8%
VW division	23,494	29,018	-19%

**VW Group Of America**

<b>Subaru</b>	<b>33,000</b>	<b>27,663</b>	<b>19%</b>
<b>Mercedes-Benz</b>	23,892	23,578	1%
<b>Smart USA</b>	521	481	8%
<b>Daimler AG</b>	<b>24,413</b>	<b>24,059</b>	<b>2%</b>
<b>BMW division</b>	18,253	16,513	11%
<b>Mini</b>	2,543	3,682	-31%
<b>Rolls-Royce*</b>	86	84	2%
<b>BMW Group</b>	<b>20,882</b>	<b>20,279</b>	<b>3%</b>
<b>Mazda</b>	<b>18,813</b>	<b>21,318</b>	<b>-12%</b>
<b>Jaguar</b>	1,347	1,029	31%
<b>Land Rover</b>	4,674	4,200	11%
<b>Jaguar Land Rover N.A.</b>	<b>6,021</b>	<b>5,229</b>	<b>15%</b>
<b>Mitsubishi</b>	<b>4,867</b>	<b>4,659</b>	<b>5%</b>
<b>Volvo Cars N.A.</b>	<b>3,792</b>	<b>4,875</b>	<b>-22%</b>
<b>Maserati</b>	<b>567</b>	<b>172</b>	<b>230%</b>
<b>Suzuki</b>	-	<b>1,486</b>	<b>-100%</b>
<b>Other**</b>	<b>257</b>	<b>253</b>	<b>2%</b>
<b>U.S. LIGHT VEHICLE</b>	<b>1,011,187</b>	<b>1,043,237</b>	<b>-3%</b>

\*Estimate

**Highlights**

<b>Mfgr. highest volume - Jan.</b>	<b>GM</b>	<b>171,486</b>
<b>Mfgr. gained the most volume - Jan.</b>	<b>Nissan NA</b>	<b>9,551</b>
<b>Mfgr. lost the most volume - Jan.</b>	<b>GM</b>	<b>(23,213)</b>
<b>Mfgr. highest % increase - Jan.</b>	<b>Maserati</b>	<b>230%</b>
<b>Mfgr. biggest % drop - Jan.</b>	<b>Volvo</b>	<b>-22%</b>

<b>Brand highest volume - Jan.</b>	<b>Ford</b>	<b>147,521</b>
<b>Brand gained the most volume - Jan.</b>	<b>Jeep</b>	<b>11,592</b>
<b>Brand lost the most volume - Jan.</b>	<b>Chevrolet</b>	<b>(18,215)</b>
<b>Brand highest % increase - Jan.</b>	<b>Maserati</b>	<b>230%</b>
<b>Brand biggest % drop - Jan.</b>	<b>Mini</b>	<b>-31%</b>

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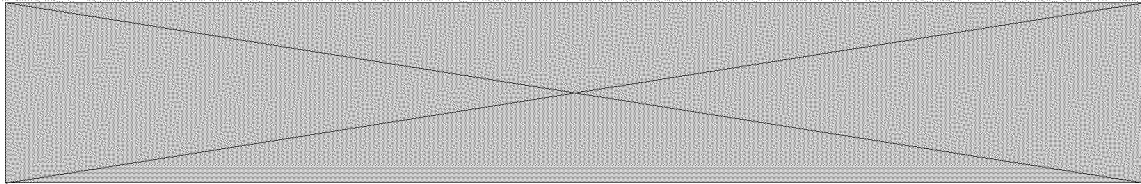
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**From:** Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
**Subject:** Accepted: Defeat Device penalty framework discussion  
**Start Date/Time:** Mon 2/10/2014 9:00:00 PM  
**End Date/Time:** Mon 2/10/2014 10:00:00 PM

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Tue 2/4/2014 5:03:50 PM  
**Subject:** Green Car Report Daily Headlines

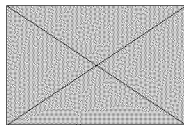
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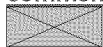
## 2014 Jeep Cherokee Diesel, Glucose Batteries, 2017 Audi Q8 e-tron, : Today's Car News

Feb 04, 2014 04:55 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)

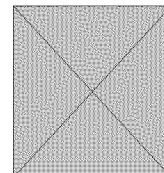
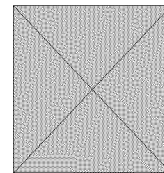


Today on Green Car Reports: The 2014 Jeep Cherokee gets a diesel engine option in Europe, researchers investigate glucose-based batteries, and the 2017 Audi Q8 e-tron all-electric crossover will likely the Tesla Model X. All this and more on Green Car Reports. We've updated our report on plug-in electric car sales in January with more figures...

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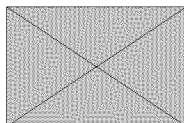


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## Tesla Celebrates LA-To-NYC Cross-Country Road Trip In Style

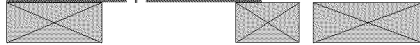
Feb 04, 2014 04:52 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Ben Rich)



A jubilant team of Tesla employees celebrated their record-breaking cross-country trip at the Manhattan Tesla Store last Sunday. And for having spent 76 hours either driving a Tesla Model S electric car across the country or sleeping in a support van, hey looked pretty good. The trip demonstrated the ability of an 85-kilowatt-

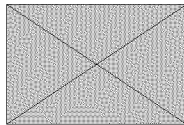
hour Tesla Model S to...

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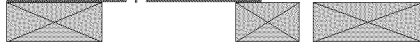
## Hyundai On Hydrogen Fuel-Cell Vehicles: Critiquing Its Claims

Feb 04, 2014 04:09 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



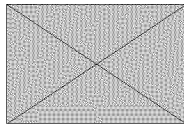
Every so often, Hyundai posts an entry on its "Hyundai Like Sunday" blog, which promotes itself as "Truth, Candor and Conversation." Two months ago, the company's Elizabeth Chun offered some thoughts on its upcoming 2015 Hyundai Tucson Fuel Cell compact crossover. That vehicle will be offered for lease this spring in selected markets in Southern...

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## Targeting Tesla Model X: 2017 Audi Q8 e-tron All-Electric Crossover Utility

Feb 04, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



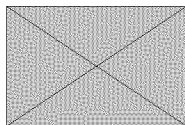
For the most part, the selection of truly practical electric vehicles--or even hybrids, for that matter--has been relatively poor. In terms of all-electric crossovers, there's the Toyota RAV4 EV and... well, the Toyota RAV4 EV. That'll change when Tesla launches its Model X crossover and now German automaker Audi is expected to launch its own...

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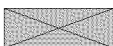
## 2014 Jeep Cherokee To Be Offered With Diesel Engine--In Europe

Feb 04, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



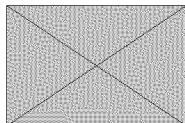
Jeep will use the Geneva Motor Show in March to launch the latest addition to its Cherokee range--the Cherokee Diesel. Hurrah! The bad news is that there are no intentions to bring this model to the U.S, where the most efficient Cherokee currently utilizes a 2.4-liter, four-cylinder gasoline engine. Boo! The new diesel model instead slots a...

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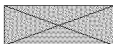
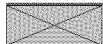
## Glucose-Based Battery Has 10 Times Energy Of Lithium: Researchers

Feb 04, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Humans and batteries--and indeed most other things in the natural world, operate on largely similar principals. Energy is generated somehow, stored, and expended for work. It's only the details that separate these processes, but the gap might shrink with the advent of biobatteries. As ExtremeTech reports, researchers at Virginia Tech have...

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**To:** Jackson, Judy[Jackson.Judy@epa.gov]; Zaremski, Sara[zaremski.sara@epa.gov]; Pidgeon, Bill[pidgeon.bill@epa.gov]; Abbas, Kassem[Abbas.Kassem@epa.gov]; Poirier, Christi[Poirier.Christi@epa.gov]; Yang, Ching-Shih[Yang.Ching-Shih@epa.gov]  
**From:** Ball, Joel  
**Sent:** Tue 2/4/2014 8:28:23 PM  
**Subject:** RE: IUVP Email Notification Procedure

Hi I will not be able to make it to this meeting but here are my thoughts,

Is the missing data CARB is referring to really missing in Verify? How do we avoid duplicate entries if manufacturers are re-submitting?

Joel Ball  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4238  
ball.joel@epa.gov

-----Original Appointment-----

**From:** Jackson, Judy  
**Sent:** Thursday, January 30, 2014 6:58 PM  
**To:** Jackson, Judy; Zaremski, Sara; Ball, Joel; Pidgeon, Bill; Abbas, Kassem; Poirier, Christi; Yang, Ching-Shih  
**Subject:** IUVP Email Notification Procedure  
**When:** Tuesday, February 04, 2014 4:00 PM-4:30 PM (GMT-05:00) Eastern Time (US & Canada).  
**Where:** AA-Room-Office-N62-ASDCDConfRoom/AA-OTAQ-OFFICE

I requesting a quick meeting to discuss a CARB IUVP change request. They have done analysis on their IUVP data, and have identified some current and historical gaps in their data, and are now giving guidance to resubmit their incomplete submissions. They received a request from the manufacturers to provide them the *"Verify number associated to the LOD Test Number"*. Currently, CARB does not receive that information from us. Below is an email trail with more information.

Judith A. Jackson, PMP, MBA  
Verify Project Manager  
Compliance Division  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency

[jackson.judy@epa.gov](mailto:jackson.judy@epa.gov)  
202-343-9245

---

**From:** Ex. 7  
**Sent:** Wednesday, January 29, 2014 4:22 PM  
**To:** Jackson, Judy  
**Cc:** Ex. 7; Zaremski, Sara; Abbas, Kassem  
**Subject:** RE: IUVP Email Notification Procedure

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hi Judy,

Thank you for following up on this and let us know if we should meet as a group to discuss IUVP coordination. I just want to let you know that we did contact the manufacturer and their response was

"

*Hi Cheryl,*

*Yes, for us it would be much simpler to not have to track another unique number, and stick to using the verify test ID number we currently use.*

*We enter the Verify Test ID number into our database, once the EPA processes the submission. Therefore, we can easily search our system by VIN, and locate the Verify number associated to the LOD Test Number you need to have resubmitted, or corrected. "*

Ex. 7

**Ex. 7**

Emissions Compliance, Automotive Regulations & Science Division

**Ex. 7**

Description: [cid:image001.jpg@01CC9A0F.CF152C40](#)

**From:** Jackson, Judy [<mailto:Jackson.Judy@epa.gov>]

**Sent:** Tuesday, January 28, 2014 2:33 PM

**To:** **Ex. 7**

**Cc:** **Ex. 7** Zaremski, Sara; Abbas, Kassem

**Subject:** RE: IUVP Email Notification Procedure

Thanks for documenting this **Ex. 7** I will proceed on finding answers to your questions.

Best Regards

Judy

Judith A. Jackson, PMP, MBA

Verify Project Manager

Compliance Division

Office of Transportation and Air Quality

U.S. Environmental Protection Agency

[jackson.judy@epa.gov](mailto:jackson.judy@epa.gov)

202-343-9245

**From:** [REDACTED] **Ex. 7**  
**Sent:** Tuesday, January 28, 2014 5:22 PM  
**To:** Jackson, Judy  
**Cc:** [REDACTED] **Ex. 7**  
**Subject:** FW: IUVP Email Notification Procedure

Hi Judy,

Just a brief background regarding our IUVP application. This application was originally designed to accept data from Verify, load it into our database, and then provide access to our IUVP staff via ODBC connections. Staff would then analyze this data. The IUVP application was recently enhanced with new business requirements/processes that required us to develop built-in queries that identified test\_groups based on criteria provided by our IUVP group. In developing these procedures/queries, we noticed errors in the IUVP data e.g., missing standards, emissions being null and so on. Our IUVP staff (Tom Valencia et.al) have begun working with manufacturers to correct some of this data, however, going forward we also want to set up an email notification procedure (see attachment) that automatically identifies errors and requests manufacturers re-submit data via Verify. This is something similar to what we are currently doing under E-Cert\_MCY/ATV.

As I mentioned in our phone call, the IUVP data we get from Verify comes from the front-end (without Verify\_test\_number). Therefore, if a manufacturer sends a new information to Verify; this information may get loaded into Verify but our application may identify an error and request a correction. The file submission would be identified based on the file name, manufacturer code, VIN, Emission Program Type, Mileage Category Code and LOD Test Number.



We sent out the email notification (shown below) yesterday and one of the manufacturers asked *"Will you be using the same IUVP Test ID number that verify returns when submitting data, or will CARB be generating an unique number that we need to reference when submitting data/corrections?"* We can generate our own unique number, however, it may cause problems with Verify and hence our phone call to you earlier.

Note, if we set our own unique id number and manufacturer's submit corrections based on this number then it may require changes to Verify so that it accepts the data, ignores this data element and proceeds to send the corrected data to CARB. Ideally, CARB should be getting IUVP data from the back-end(with the Verify\_test\_number). This will allow us to identify corrections using the same Verify\_test\_number. Please let me know if this is doable. In the meantime, we plan on responding to the manufacturer that *"Unfortunately we do not receive the Verify\_test\_number that is generated by Verify when a new record is added. This number is generated by the Verify system after we receive the IUVP file. We are in correspondence with USEPA to see if we can get the data from the back end or after they process it. In the meantime, if we do not include any unique number is it easy for you to correct/update the record by manufacturer, vin, emission program, mileage category code and lod test number?"*

A large, bold, black text "Ex. 7" is centered within a dashed rectangular border.

Emissions Compliance, Automotive Regulations & Science Division

A smaller, bold, black text "Ex. 7" is centered within a dashed rectangular border.

Description: [cid:image001.jpg@01CC9A0F.CF152C40](#)

From: A dashed rectangular box containing the text "Ex. 7".

Sent: Monday, January 27, 2014 10:47 AM

To: [carlheinz.bayer@bmwna.com](mailto:carlheinz.bayer@bmwna.com); [peace.ouwague@bmwnaext.com](mailto:peace.ouwague@bmwnaext.com);  
[bab11@chrysler.com](mailto:bab11@chrysler.com); [justin.wiseman@chrysler.com](mailto:justin.wiseman@chrysler.com); [lbc11@chrysler.com](mailto:lbc11@chrysler.com);  
[ravinder.d.singh@cummins.com](mailto:ravinder.d.singh@cummins.com); [mpoll1@ford.com](mailto:mpoll1@ford.com); [christopher.cislo@gm.com](mailto:christopher.cislo@gm.com);  
[randall.c.harvey@gm.com](mailto:randall.c.harvey@gm.com); [janice\\_lasko@ahm.honda.com](mailto:janice_lasko@ahm.honda.com);  
[tommy\\_chang@ahm.honda.com](mailto:tommy_chang@ahm.honda.com); [adambrosi@hatci.com](mailto:adambrosi@hatci.com); [jhorton@hatci.com](mailto:jhorton@hatci.com);

ghall12@jaguarlandrover.com; drobertson@mazdausa.com; jtakeda1@mazdausa.com;  
nokawa@mazdausa.com; ashim.manchanda@daimler.com;  
dennis.pawlak@na.mitsubishi-motors.com; douglas.reid@na.mitsubishi-motors.com;  
jessica.robinson@na.mitsubishi-motors.com; mittchell.olson@na.mitsubishi-motors.com;  
khanf@nrd.nissan-usa.com; selisa@nrd.nissan-usa.com; ross.gatzke@porsche.us;  
walter.lewis@porsche.us; jrug@subaru.com; balsip@suz.com;  
luis.hernandez@suz.com; cassandra.pogoda@tema.toyota.com;  
tom.beierschmitt@tema.toyota.com; gregory.buffalino@volvocars.com;  
ken.reed@volvocars.com; katrina@boshartengineering.com; tobias.glas@vw.com;

**Ex. 7**

**Cc:**

**Ex. 7**

**Ex. 7**

**Subject:** IUVP Email Notification Procedure

To all manufacturers:

The California Air Resources Board (CARB) will be implementing an email notification service on February 18<sup>th</sup>, 2014 for the In Use Verification Program (IUVP). This service monitors the process of loading the IUVP XML file into CARB's IUVP database. Note, the IUVP XML file is submitted to CARB via U. S. Environmental Protection Agency's (USEPA) Verify system. The purpose of this email notification service is to notify manufacturers when the IUVP XML file has:

1. Loaded successfully - acknowledging that the file loaded into database.
2. Loaded with missing data - email requesting manufacturers to resubmit corrected or missing data to U.S. EPA Verify system.
3. Load failed - email identifying errors why the load process failed and requesting manufacturers to resubmit corrected data to U.S. EPA Verify system.

The attached file details the IUVP XML load procedure and list the logical and missing data error check that are performed on the vehicle and test information tables. If you have any questions or comments regarding the notification procedure, please call or email IUVP technical support staff before February 7<sup>th</sup>, 2014.

Contacts:

IUVP technical support staff:

. **Ex. 7**

Ph.: **Ex. 7**

. **Ex. 7**

Ph.: **Ex. 7**

IUVP program support staff:

. **Ex. 7**

Ph.: ( **Ex. 7**

. **Ex. 7**

Ph.: ( **Ex. 7**

**Ex. 7**

Emissions Compliance, Automotive Regulations & Science Division

**Ex. 7**

Description: [cid:image001.jpg@01CC9A0F.CF152C40](#)

**To:** Giles, Michael (EEO)[michael.giles@vw.com]  
**From:** Good, David  
**Sent:** Tue 2/4/2014 10:09:23 PM  
**Subject:** RE: CREE Rounding

Mike,

Please send me a copy of the 1/9/2013 rounding guidance which I sent you.

Thanks

**From:** Giles, Michael (EEO) [mailto:michael.giles@vw.com]  
**Sent:** Tuesday, February 04, 2014 3:15 PM  
**To:** Good, David  
**Subject:** CREE Rounding

Hello Dave,

I am working on our data set for GHG reporting for MY 2013. Last year, we had some last minute adjustments to make with the CREE rounding, which I am hoping to correct for this year.

I have a rounding guidance document from you, with revision date 1/9/2013. If you have made any further changes, could you please send me a copy for reference?

Many thanks,

Mike

Michael Giles

Certification Engineer – EEO

VW Group of America

(248) 754-4229

**To:** Good, David[good.david@epa.gov]  
**From:** Giles, Michael (EEO)  
**Sent:** Wed 2/5/2014 2:04:51 PM  
**Subject:** RE: CREE Rounding  
CREE Calcs & Rounding-w-superDFs - copy.810-rev1-9-13.doc

Hello Dave,

Here it is.

Thanks

Mike

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Tuesday, February 04, 2014 5:09 PM  
**To:** Giles, Michael (EEO)  
**Subject:** RE: CREE Rounding

Mike,

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Thanks

**From:** Giles, Michael (EEO) [mailto:michael.giles@vw.com]  
**Sent:** Tuesday, February 04, 2014 3:15 PM  
**To:** Good, David  
**Subject:** CREE Rounding

Hello Dave,

I am working on our data set for GHG reporting for MY 2013. Last year, we had some last minute adjustments to make with the CREE rounding, which I am hoping to correct for this year.

I have a rounding guidance document from you, with revision date 1/9/2013. If you have made any further changes, could you please send me a copy for reference?

Many thanks,

Mike

Michael Giles

Certification Engineer – EEO

VW Group of America

(248) 754-4229

# Final Greenhouse Gas Rule 75 FR 25324 (May 7, 2010)

## DRAFT Summary of CREE Rounding - (ASTM Rounding)

- Regulations Take Precedence

D. Good 7/21/2010, rev 1/13/2011, 1/9/2013

### DRAFT - CREE/OCREE Calculations using city & hwy “Super DFs”

#### Test Data – round city/hwy to nearest whole gpm:

600.113(g) & 600.206(a)(1) Round City & Hwy CREE/OCREE to nearest whole gpm value

1. Although CREE/OCREE includes deterioration factors (DFs) (or aged components) per

600.113(g)(2)(ii) & (g)(2)(iv)(3), do not apply DFs to each constituent

- Round HC to nearest 0.001
  - Round CO to nearest 0.01 gpm
  - Round CO<sub>2</sub> to nearest whole number
  - Round NMHC to nearest 0.0001 gpm
  - Round N<sub>2</sub>O to nearest 0.0001 gpm
  - Round CH<sub>4</sub> to nearest 0.0001 gpm
  - Round CH<sub>3</sub>OH, C<sub>2</sub>H<sub>5</sub>OH, C<sub>2</sub>H<sub>4</sub>O, HCHO to nearest 0.0001 gpm
2. Store the sum of the CREE/OCREE constituent values (rounded as above) at the test level
- For OCREE, include the 298 N<sub>2</sub>O factor and the 25 CH<sub>4</sub> factor
3. Using the Super DFs, calculate the 120K CREE/OCREE levels (used for the certification level of a test group and the final model year report) as follows:
- Round the sum of the CREE/OCREE constituents (from step 2) to nearest whole number.
  - Apply city Super DF to the city CREE/OCREE test result and the hwy Super DF to the hwy CREE/OCREE test result.
    - Note: Normally, one “Super DF” would be used for both city and hwy tests, however in some cases, manufacturers may want to use separate city & hwy DFs
  - After applying Super DFs, round the resultant CREE/OCREE test results to nearest whole number

#### How to Determine Super DFs:

- Additive City Super DFs - Manufacturers would determine DFs normally for each durability group (per 86.1823-08(a) thru (l)) for all CREE/OCREE constituents except CO<sub>2</sub>. For CO<sub>2</sub>, manufacturers could use a zero DF per 86.1823-08(m)(1) or an alternative DF per 86.1823-08(m)(1)(iii) or (iv). Additive CREE/OCREE Super DFs would be the sum of the individual constituent DFs using the following equation for gasoline vehicles:

$$CREE_{DF} = [(CWF/0.273) \times NMHC_{DF} + 1.571 \times CO_{DF} + CO_{2DF}]$$

Round the final CREE/OCREE Super DF to the nearest 0.1 grams/mile similar to 86.1823-08(f)(1)(ii)(B). Additive CREE/OCREE Super DFs less than zero would be changed to zero, similar to 86.1823-08(f)(1)(ii)(B).

- Additive Highway Super DFs - Manufacturers would determine hwy Super DFs for each durability group similar to additive City Super DFs, as outlined above. The provisions of 86.1823-08(m)(3) allow manufacturers the option of using the applicable city Super DF for highway tests (in lieu of determining separate highway Super DF for CREE/OCREE).
- Multiplicative City Super DFs - Same as above for Additive City Super DFs, except that the following equation should be used:

$$CREE_{DF} = CREE_{120K \text{ emissions}} / CREE_{4K \text{ emissions}}$$



Again, for CO<sub>2</sub>, manufacturers should mathematically adjust the durability data so that CO<sub>2</sub> uses a 1.0 DF per 86.1823-08(m)(1) or an alternative DF per 86.1823-08(m)(1)(iii) or (iv). For example, manufacturers should calculate the CREE/OCREE DFs using the 4,000 mile CO<sub>2</sub> emission value for both the 4,000 and 120,000 mile data points (mathematically assigning no deterioration to CO<sub>2</sub> emissions). Multiplicative CREE/OCREE Super DFs should be rounded to three decimal places similar to 86.1823-08(f)(1)(ii)(A). Multiplicative CREE/OCREE Super DFs less than one would be changed to one, similar to 86.1823-08(f)(1)(ii)(B).

- Multiplicative Highway Super DFs – Manufacturers would determine hwy Super DFs for each durability group as outlined above for multiplicative City Super DFs. The provisions of 86.1823-08(m)(3) allow manufacturers the option of using the applicable city Super DF for highway tests (in lieu of determining separate highway Super DF for CREE/OCREE).
- Assigned DFs for Small Volume Manufacturers and Small Volume Test Groups – Similar to the requirements outlined in 40 CFR 86.1826-01 and 86.1838-01 small volume manufacturers can use assigned Super DFs for CREE/OCREE city and highway tests. EPA will determine the appropriate city and highway Super DFs by guidance letter. Super DFs could be mathematically determined from the DFs provided in CCD-05-10 for NMHC/NMOG, CO and HCHO (and assuming emission levels in compliance with the 2012 emission standards). Note that CCD-05-10 provides only multiplicative assigned DFs.

**Subconfiguration - round city/hwy to nearest 0.1 gpm:**

600.206(a)(2)(ii)      Arithmetically average multiple tests and round City & Hwy CREE to nearest 0.1 gpm

- If only one city or one hwy test, CREE is rounded to nearest whole gpm value

**Configuration - round city/hwy to nearest 0.1 gpm:**

600.206(a)(2)(iii)      Sales weight subconfiguration City & Hwy CREE values determined above & round product to nearest 0.1 gpm.

- Determine subconfiguration sales fraction to nearest 0.0001

**Configurations for Fleet Ave CREE calcs - round combined CREE to nearest 0.1 gpm:**

600.206(a)(3)(ii)      Arithmetically average (55/45) City & Hwy CREE values determined above & round combined CREE product to nearest 0.1 gpm

**Base Level - round combined CREE to nearest 0.1 gpm:**

600.208(a)(4)(ii)      Sales weight configuration city/hwy/combined CREE values determined above & round city/hwy/combined product to nearest whole gpm value [EPA proposed in the FE Label rule to revise 600.208(a)(4)(ii) to require rounding to the nearest 0.1 gpm]

- Determine configuration sales fraction to nearest 0.0001

**Model Type - round combined CREE to nearest whole gpm:**

600.208(b)(3)(ii), (b)(4) and 600.510(b)(2)(v)      Sales weight base level city/hwy/combined CREE values determined above & round city/hwy/combined CREE product to nearest gpm value

- Determine base level sales fraction to nearest 0.0001

**Corporate Average CREE - round combined CREE to nearest whole gpm:**

600.510 (a)(2), (b)(2), (j)      Sales weight model type combined CREE values determined above & round combined CREE product to the nearest whole gpm value.

- Actual production data are used for each model type instead of sales fraction

**Notes:** (1) Sales means “produced and delivered for sale;” ref. 86.1865-12(i)(1)  
(2) To prevent rounding errors, if only one city or highway test is used for several subconfigurations, the combined results of the sales-weighted configuration, base level and model type calculations must equal the tested city and highway CREE values.

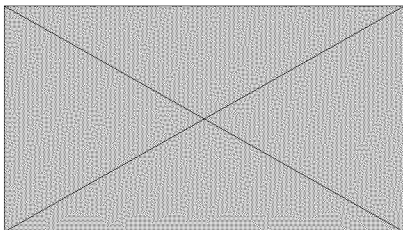
**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** WardsAuto OEM Edition  
**Sent:** Wed 2/5/2014 4:12:08 PM  
**Subject:** Developer Says Injectors Promise 20% Fuel-Economy Gains

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# WardsAuto OEM Edition

February 5, 2014

## North American Plants Zero in on 18 Million Available Production



Forecast 2014 available production of 17.8 million is 900,000 units above 2013's 16.9 million, and a major increase from the recession year of 2009 when the total bottomed out at 13.8 million.

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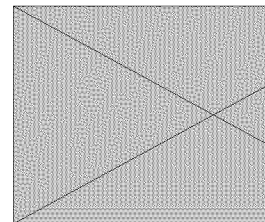
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## Toyota: We'll Sustain Truck Volume Despite Competition

New trucks from GM and Ford won't sink Tundra or Tacoma sales, says a top company official.

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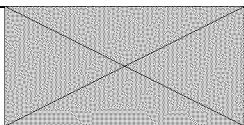
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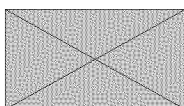
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U.S. January Sales Slip; Toyota's in the Money; NHTSA Blesses V2V

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## **BMW Exec Sees Little Need for Public Charging**

As European customers take ownership of the new i3 electric vehicle, Herbert Diess says establishing a public infrastructure “is not really very important because most people are charging their cars at home.”

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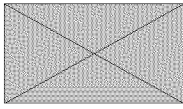
## **Chicago Auto Show Features Consumer-Driven Marketing**

“People often wait in line 45 minutes to take a test drive,” Chicago Auto Trade Assn. President Dave Sloan says. “If a person is waiting 45 minutes to ride in one of your vehicles, that’s 45 minutes not being spent over in your rivals’ exhibits.”

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## **VideoWire**



VW Chattanooga Nears UAW Vote; EV Road Trip

## **Developer Says New Injectors Promise 20% Fuel-Economy Gains**

Nostrum Motors also is working on a new 100 mpg engine that could be on the road by the end of the decade. The new engine is cooled internally, allowing the radiator to be reduced in size or completely eliminated.

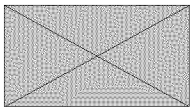
[FULL ARTICLE](#)

## **More Than 85 Million Vehicles Sold Worldwide in 2013**

Toyota was the world's top seller for the second year in a row in 2013, with deliveries rising 2.4% to 9.9 million units.

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## **Videos: 2014 Super Bowl Ads**



Here's a look at all the key automotive ads from this year's Super Bowl broadcast.

## **WardsAuto Poll**

What was your favorite automotive ad from this year's Super Bowl? Vote in our latest poll.

## **KSPG Steeling Piston Market**

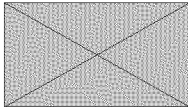
The move toward turbocharged GDI engines has raised operating temperatures to the point that aluminum pistons expand, causing excess friction within the combustion chamber. Steel is more rigid and can resist expansion.

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## **Chevy Silverado, GMC Sierra Heavy Duty Diesels Walk the Walk**

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If seat-of-the-pants testing is any indication, it might be time to reverse the pecking order in the big-pickup segment.

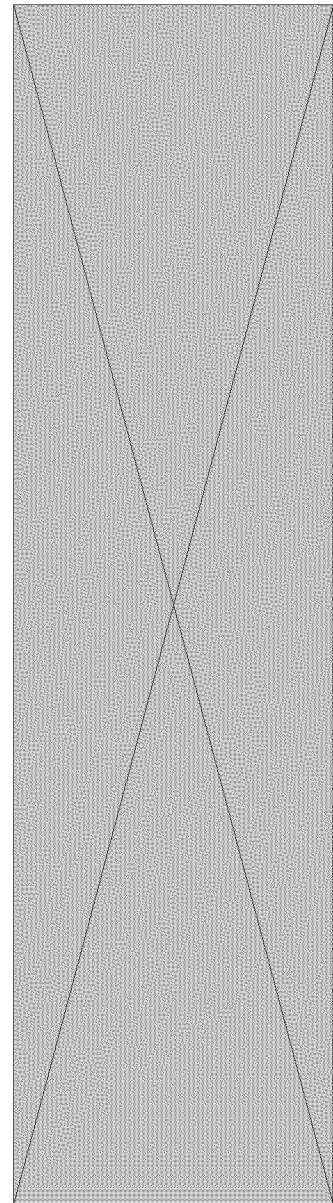
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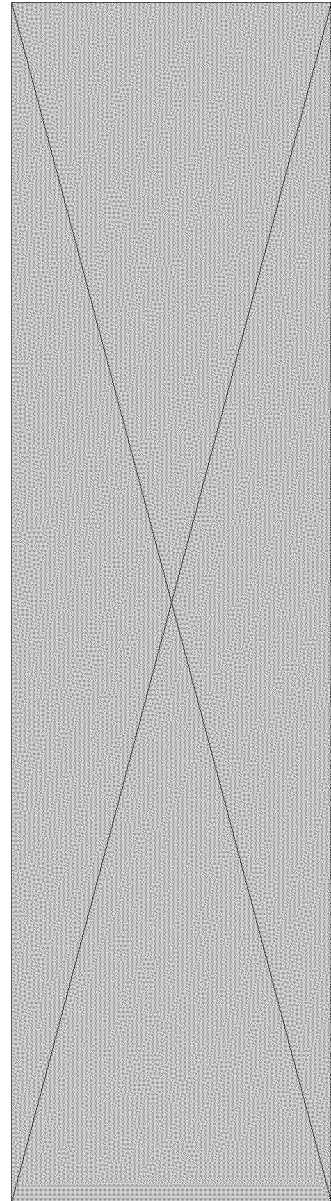
## **Gallery: '15 Chevrolet Silverado and GMC Sierra HD Pickups**

The ease with which these trucks trailer heavy loads makes a fella feel like he could hitch up the moon.

## **Video: '15 Chevrolet Silverado Super Bowl Commercial "Romance"**

"Romance" is a story about a man, his truck and a new bachelor in town. It follows a cattle rancher as he transports his stud-bull to a romantic rendezvous across town in the '15 Chevy Silverado HD.





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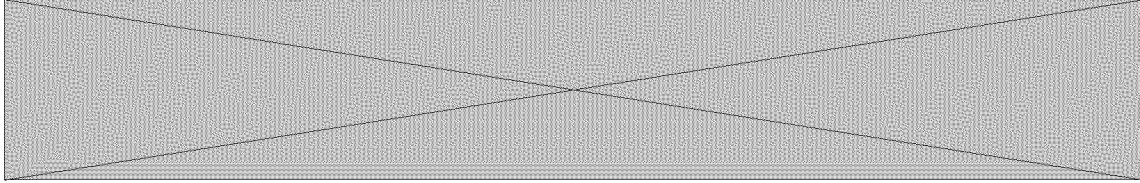


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**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Wed 2/5/2014 5:06:10 PM  
**Subject:** Green Car Report Daily Headlines

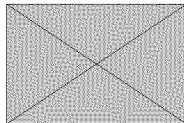
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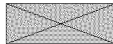
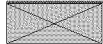
## Tesla A Top Brand, Diesel Ram Mileage Ratings, Electric- Car Sales To Surge: Today's Car News

Feb 05, 2014 04:46 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



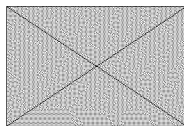
Today on Green Car Reports: An analyst believes global electric-car sales will grow by 67 percent this year, automakers unveil tiny SUVs at the 2014 India Auto Expo, and the Renault Fluence ZE electric car is no more. All this and more on Green Car Reports. The 2014 Ram 1500 EcoDiesel pickup is EPA-rated at 23 mpg combined. Here's the final update...

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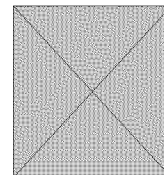
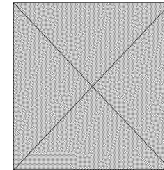
## Tiny SUVs Shown By Chevy, VW, Honda At India Auto Expo

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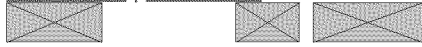
Automotive fashion plates now have a new trend to follow: very small SUVs. At the 2014 India Auto Expo in New Delhi, automakers debuted a crop of concept models with sport-utility vehicle styling and packaging--if not genuine off-road all-wheel-drive abilities--

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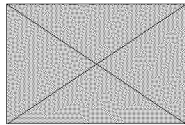
in even smaller vehicle segments than we've seen so far. While not all the tiny...

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## Global Electric-Car Volume To Surge 67 Percent This Year: Analyst

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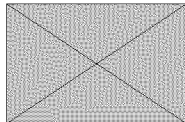
Electric cars may be suffering from the January blues, but if one analyst is correct that lull in sales won't last very long. Ben Scott, an analyst for IHS Automotive, predicts that global production of plug-in hybrids and battery electric vehicles will rise by 67 percent this year. According to the Los Angeles Times, a combination of more models...

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## 2014 Nissan Pathfinder Hybrid: Gas Mileage Test Disappointing

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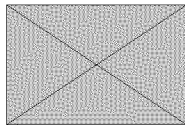
Hybrid SUVs and crossover utility vehicles remain rare compared to the growing array of hybrid passenger sedans and hatchbacks. So we've been eager to test the new 2014 Nissan Pathfinder Hybrid, one of only four hybrid crossovers. MORE: 2014 Nissan Pathfinder Hybrid: Is It Hybrid Enough To Matter? It's only a mild hybrid, unlike Toyota and Lexus...

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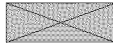
## Renault Fluence ZE Electric Car, Built For Better Place, Discontinued

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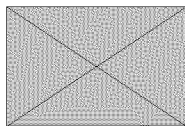
Au revoir, Renault Fluence Z.E. You were among the first electric cars on the market, and you've lived through Better Place's bankruptcy, but now you're gone. Gas2 reports that Renault has quietly discontinued its electric sedan, which has sold little more than 3,500 units since going on sale in 2011. Most of its troubles have stemmed from the...

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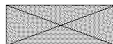
## 2014 Honda Civic Hybrid On Sale Today, Natural Gas In 10 Days

Feb 05, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



Honda has finished revamping the compact Civic compact lineup with the relaunch of its two greenest models. The refreshed 2014 Honda Civic Hybrid sedan goes on sale today with slightly higher fuel-economy ratings, while the 2014 Civic Natural Gas hits showrooms in 10 days. MORE: 2012 Honda Civic Natural Gas: First Drive Equipped with a 1.5-liter...

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## Tesla Already Among Top 10 Car Brands In Consumer Reports Survey

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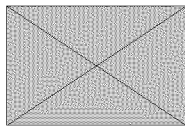
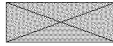
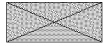


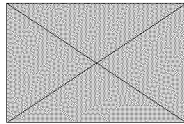
Image is vitally important to car brands. It's what makes people want your vehicles. A strong image leads to healthy brand perception, and that spreads. It even allows people to overlook the odd fault here and there, easing your company through rough patches. Tesla Motors [NSDQ:TSLA] has done much to cultivate its image over the past few years...

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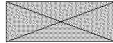
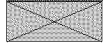
## **2014 Ram 1500 EcoDiesel Pickup Fuel Economy: 23 MPG Combined**

Feb 04, 2014 06:11 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



How do you make a full-size pickup truck more fuel-efficient? Fitting in a smaller diesel engine seems to be working for Ram. The 2014 Ram 1500 EcoDiesel achieved an EPA fuel-economy rating of 23 mpg combined for rear-wheel drive models. MORE: 2014 Pickup Truck Gas Mileage: Ford Vs Chevy Vs Ram, Who's Best? That represents a city rating of 20 mpg...

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# Yellow angel scandal challenges award legitimacy

## Editorial

The Volkswagen Golf is Germany's favourite car. That was the verdict of the ADAC, Germany's - and Europe's - largest automobile club. Every year, readers of *Motorwelt*, the club's magazine, are invited to vote for their favourite car, and in mid-January the 2014 'Gelber Engel' prize was awarded to the Volkswagen Golf.

Volkswagen didn't need the award to know that it was Germany's favourite car. It was the best-selling car in Germany in 2013, and has been the country's best-selling model for over 30 years.

But what Volkswagen certainly didn't need was for the award to be discredited. In mid-January, Germany's *Sueddeutsche Zeitung* broke the story that the yellow angel voting had been manipulated by the organisation's now-departed head of communications. Fearful that the low number of votes might threaten the award's credibility, Michael Ramstetter inflated the number of votes by a factor of ten - something he'd reportedly been doing for a number of years.

As is so often the case, once the credibility of any individual or organisation comes into question, more questions are asked. Far from being the big story, the Gelber Engel scandal was just the start of a much wider "farce", to quote the *Sueddeutsche Zeitung*.

Since the scandal was revealed, it has remained a lead item across Germany's media, from print to small screen; in such a car-obsessed country, it's hardly surprising that even the transport minister, Alexander Dobrindt, has voiced his concern.

So how influential is the Gelber Engel award? Not very, according to one well-placed industry insider, who says it's just one of a growing number of awards. It's good for marketing, but doesn't affect vehicle sales. In 2013, around three times more Golfs were sold than the second-placed car, the Passat. Volkswagen didn't need 3,400 *Motorwelt* readers to help it do that. Incidentally, the BMW 3 Series took third place.

Much more influential is the ADAC itself. The organisation is more than a

motoring club; as well as roadside rescue and a holiday club, its offerings include insurance and financial services, reliability surveys and price comparisons. Crucially, it is a powerful lobby organisation in Germany.

Questions are now being asked not only about the validity of previous Gelber Engel awards, but also about: ADAC executives' use of the ADAC air ambulance, which is partly tax-payer funded; transactions surrounding TV advertising payments linked to the Nürburgring in the wake of the 'Ring's bankruptcy; the ethics of its roadside rescue team's battery sales to stranded members; failed efforts to establish a subsidiary in Turkey; and most recently, questions about the results of its product tests, including its highly influential annual tyre test.

The Gelber Engel award has always provided a discussion point in Germany, bringing together a broad range of interested parties, from manufacturers to media and politics. Its reputation now lies in tatters, the ADAC's authority is under scrutiny, and the whole affair has raised an unwelcome question mark over the legitimacy of other, similar awards.

Martin Kahl  
Editor, Automotive World

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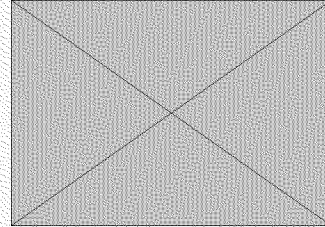
## Upcoming Events

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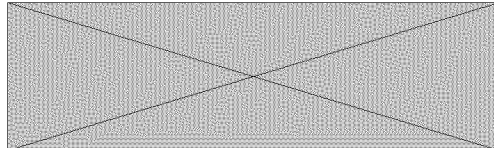


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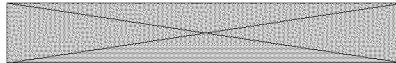
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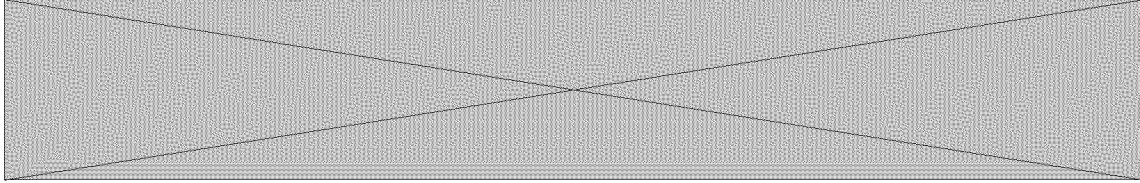
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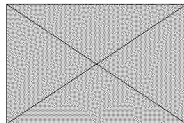
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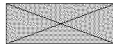
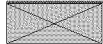
## **2015 Kia Soul EV, 2015 BMW X3 Diesel Crossover, Tesla Panama Trip: Today's Car News**

Feb 06, 2014 04:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



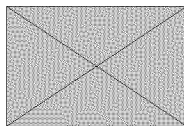
Today on Green Car Reports: The 2015 Kia Soul EV electric car and 2015 BMW X3 crossover are unveiled at the 2014 Chicago Auto Show, and an attempt to drive a Tesla Model S from Texas to Panama. All this and more on Green Car Reports. The 2015 Tesla Model X electric crossover will have all-wheel drive only, the company confirms. The 2015 Chevrolet...

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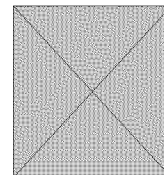
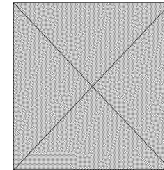
## **Cross-Country Tesla Trip? Done! How About Texas To Panama?**

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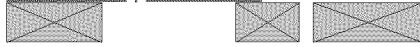
It was only a matter of time. Produce an electric car with enough range, and the journeys it can realistically achieve become almost limitless. There have been a flurry of coast-to-coast trips recently as Tesla opens up its countrywide Supercharger network, but perhaps the

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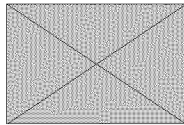
most impressive trip undertaken is that of Randy Denmon and Dean...

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## 2014 Kia Optima Hybrid Updated: Aerodynamic Tweaks And More

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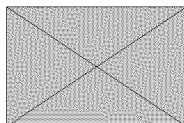
The 2014 Kia Optima Hybrid was unveiled at the 2014 Chicago Auto Show today, with aerodynamic tweaks and a few other updates. Kia's hybrid mid-size sedan gets a few small changes to increase efficiency and keep its styling current. It's not surprising that the changes are minor; the car had already received significant mechanical and packaging...

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## 2015 Kia Soul EV Electric Car Unveiled At Chicago Auto Show

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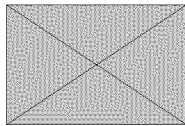
Call it electric Soul: Kia took the wraps off its first electric car to be sold in the U.S. this morning, officially launching the 2015 Kia Soul EV at the Chicago Auto Show. The Soul EV was one of three Kia vehicles featured at the Chicago show. It was shown alongside the Kia Niro Concept, a hybrid subcompact urban utility vehicle, first shown...

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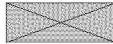
## Kia Niro: Subcompact Hybrid Urban Concept At Chicago Auto Show

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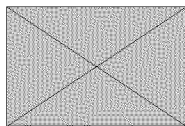
Kia's Niro concept, a subcompact-sized urban hybrid, is making its U.S. debut at the Chicago Auto Show today. First unveiled at the 2013 Frankfurt Auto Show, the Niro points the way to possible future models for Kia, a potential rival for models like the Nissan Juke and upcoming Honda Fit-based crossover. It's the latest take on Kia's...

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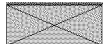
## Electric Honda Fit EV Goes Ice-Racing Against Old Two-Stroke Saab

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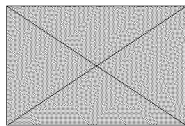
Given the recent cold snap, spending a day deliberately driving around on ice might not seem that appealing. Others, such as those from the Adirondack Motor Enthusiast Club, like nothing more than to take to a frozen lake in their cars. But this past weekend they got to compete against a sort of car they'd never raced before: An electric vehicle...

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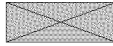
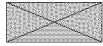
## 2015 Chevrolet City Express Small Van Launched At Chicago Auto Show

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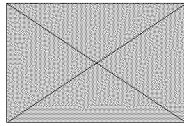
Chevrolet has announced full details of its 2015 City Express van, launched at this year's Chicago Auto Show. Basically a rebadged version of Nissan's NV200 van--best-known in its more fenestrated guise as New York City's "Taxi of Tomorrow"--the City Express promises greater fuel efficiency than full-size vans. The front-wheel drive City Express...

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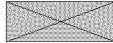
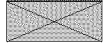
## **2015 BMW X3 Crossover Adds Diesel AWD Model, Other Updates**

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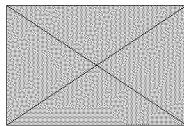
The BMW X3 sport-utility vehicle will add a diesel engine option for 2015 to the two gasoline engines now offered, part of a mid-cycle refresh for BMW's compact crossover. The new diesel X3 gives BMW a direct competitor for the new 2014 Audi Q5 TDI, and the 2013 Mercedes-Benz GLK 250 BlueTEC—meaning that all three German luxury brands...

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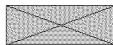
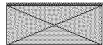
## **2015 Tesla Model X Will Have All-Wheel Drive Only, Company Confirms**

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(John Voelcker)



With less than a year to go before the first production Tesla Model X all-electric crossover utility vehicles are scheduled to roll off the assembly line, the company has confirmed that every Model X will come standard with all-wheel drive. Previously, four driven wheels were listed as an option, with a base Model X offered with rear-wheel drive...

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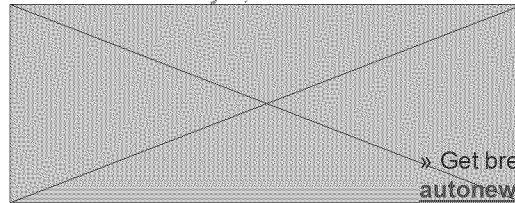
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UPDATED: 2/6/14 4:32 pm ET  
2:34 pm U.S. ET | Feb 6

In his most strongly worded statement on trade issues to date, Joe Hinrichs, president of Ford's Americas unit, took Japan and specifically Toyota to task today for benefiting unfairly from currency manipulation. ...

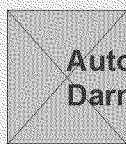
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### **GM's Q4 profit grows 2% on strong N.A., China results**

UPDATED: 2/6/14 4:20 pm ET -- adds closing stock price  
7:31 am U.S. ET | Feb 6

General Motors rode strong pricing in North America and sales growth in China to slightly higher fourth-quarter profits, even as its performance skidded in other international markets. ... [» READ](#)

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### **Subaru seeks more traction in mid-sized sedan segment with '15**

#### **Legacy**

UPDATED: 2/6/14 1:15 pm ET

11:30 am U.S. ET | Feb 6

Subaru may be one of the hottest brands in the United States, but it has never made a major dent in the mid-sized sedan market. ... » [READ](#)

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### **GM adds Nissan-built van to take on Transit Connect**

UPDATED: 2/6/14 11:51 am ET - adds photo gallery

6:57 am U.S. ET | Feb 6

General Motors is introducing a new cargo van, built by Nissan under a supply alliance formed last year, to compete with Ford's Transit Connect in the United States. ... » [READ](#)

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### **Toyota readies sport hybrid version of top-selling Camry**

2:19 pm U.S. ET | Feb 6

Toyota, looking to keep its Camry as the top-selling car in the United States, plans to introduce a sport hybrid version of the family sedan, said Bob Carter, senior vice president for the world's largest automaker. ... » [READ](#)

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move underscores EV sales,  
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powerful woman in business  
by Fortune**

1:40 pm U.S. ET | Feb 6

**Toyota kicks up off-road  
appeal for trucks**

UPDATED: 2/6/14 10:53 am ET  
10:30 am U.S. ET | Feb 6

**Kia Soul EV to launch in 3rd  
quarter**

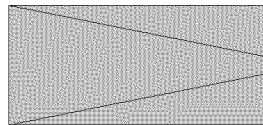
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details  
8:33 am U.S. ET | Feb 6

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11:00 am U.S. ET | Feb 6

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GM relationship extended**

12:35 pm U.S. ET | Feb 6



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**» June 4, 2014 - ANE  
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8:06 am U.S. ET | Feb 6

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12:01 am U.S. ET | Feb 6

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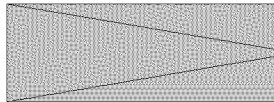
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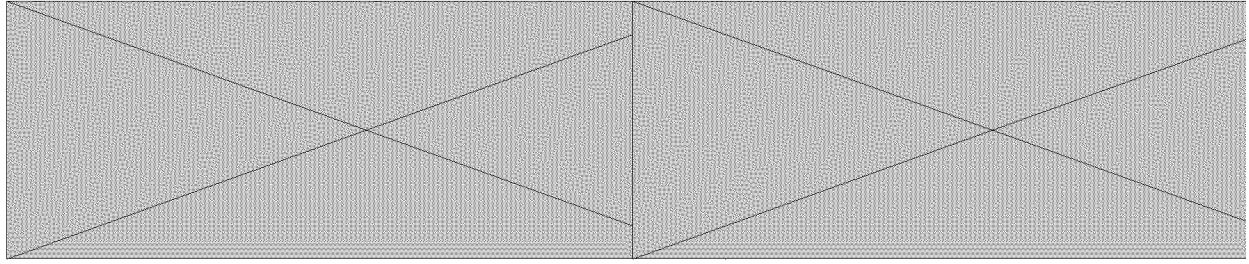
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3:45 pm U.S. ET | Feb 6

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3:18 pm U.S. ET | Feb 6





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..

**To:** Bunker, Byron[bunker.byron@epa.gov]  
**From:** Jeff Cobb  
**Sent:** Fri 2/7/2014 1:04:17 AM  
**Subject:** RE: Emission certs

That would be great. Much appreciated.

Thanks, and have a good evening,

Jeff

---

**From:** Bunker, Byron <bunker.byron@epa.gov>  
**Sent:** Thursday, February 06, 2014 8:02 PM  
**To:** Jeff Cobb  
**Subject:** Re: Emission certs

I think we should be able to help. I will follow up in the morning.

---

**From:** Jeff Cobb <jcobb@verticalscope.com>  
**Sent:** Thursday, February 06, 2014 7:28:07 PM  
**To:** Bunker, Byron  
**Subject:** RE: Emission certs

**Hi Byron,**

**I've never see one of these certs, but basically I am hoping to have something showing emissions as actually tested. I know tier 2 tests for NOx, NMOG, CO, PM, HCHO ... and anything else that may be identified.**

**<http://epa.gov/otaq/standards/light-duty/tier2stds.htm>**

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Can you get these by Friday? Even some of them if it is difficult?

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Editor-in-Chief  
HybridCars.com  
GM-Volt.com

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**Sent:** Thursday, February 06, 2014 1:59 PM  
**To:** Jeff Cobb  
**Subject:** RE: Emission certs

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In addition to the specific vehicle pairs, which pollutants do you want compared? In general, we will only have Particulate Matter (PM) data for the diesel vehicles and not the gasoline vehicles. Depending on the category, we will have NOx and CO emissions for all vehicles and some form of hydrocarbon data although the hydrocarbon may be expressed as non-methane hydrocarbons in some cases and as total hydrocarbons in others.

If you can send me a table with the vehicle pairs and data you would like to receive, we will be in the best position to get you what you want. If I understand correctly, Chris Mylan is still working to get the other information you requested.

Thanks,

Byron

\*\*\*\*\*

Byron Bunker

Director Compliance Division

Office of Transportation and Air Quality

Environmental Protection Agency

2000 Traverwood Drive

Ann Arbor, MI 48105

Bunker.Byron@epa.gov

Phone: (734) 214-4155

Mobile: (734) 353-9623

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It would only need to be a few, like from a Jetta, Cruze, maybe an Audi and M-B model, etc.

Thanks.

Regards,

Jeff

---

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**Sent:** Thursday, February 06, 2014 10:49 AM

**To:** Bunker, Byron

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**From:** Bunker, Byron <[bunker.byron@epa.gov](mailto:bunker.byron@epa.gov)>

**Sent:** Wednesday, February 05, 2014 11:47 AM

**To:** Jeff Cobb

**Subject:** RE: Emission certs

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GM-Volt.com

o-610-933-7141  
m-610-585-3814

**To:** Jeff Cobb[jcobb@verticalscope.com]  
**Cc:** Mylan, Christopher[Mylan.Christopher@epa.gov]; Ball, Joel[ball.joel@epa.gov]; Hengst, Benjamin[Hengst.Benjamin@epa.gov]; Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Bunker, Byron  
**Sent:** Fri 2/7/2014 8:28:09 PM  
**Subject:** RE: Emission certs  
[HyrbidCarsCom Jeff Cobb.xlsx](#)

Hi Jeff,

The attached spreadsheet has the data you requested. There are a couple of terms and facts that I should note for you.

- 1) FUL – Full useful life: The emission results reflect either vehicles tested after accumulating the equivalent of 120,000 miles OR tested with 4,000 miles and a deterioration factor applied based on manufacturer testing of vehicle systems to determine the deterioration rate.
- 2) PM data: Gasoline vehicles must meet the PM standard but are not required to provide test data demonstrating compliance since all modern gasoline engines emit below the PM standard. Diesel vehicles must submit PM data to demonstrate compliance. There are only two gasoline vehicles with PM data. Also note that the Chevy Cruze diesel PM test results are so low they round to zero.
- 3) Worst case vehicle: Under certain circumstances where vehicles share common engine, transmission and emission control system components manufacturers can choose to test a worst case variant of the vehicles (e.g., the heavier of the two vehicles) and use those results to demonstrate compliance for both vehicles. There are two vehicles in this table where that has occurred. BMW has used the X3 xDrive 328i data to substitute for the 328i sedan (the X3 is heavier and is less aerodynamic so easy to understand it would be worst case for that engine and transmission). Similarly, Audi has used the Bentley Continental GT data for the A8L with the same engine and transmission. For the purposes of comparing emission results, I would think these vehicle test results would still be appropriate although they may be slightly higher than the values the actual vehicles would produce.

I hope that this information is helpful to you.

\*\*\*\*\*

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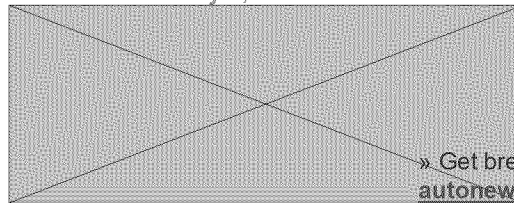
2014 Certification Test Values (FUL cert values)	Test Group	Certification Bin	NOx	NMOG	CO	PM
			g/mile	g/mile	g/mile	g/mile
Jetta sport wagenTDI 2.0L turbodiesel Auto	EVWXV02.0U5N	Bin5/ULEV	0.035	0.014	0.47	0.001
Jetta 2.0L Gas Auto	EVWXV02.0U36	Bin5/ULEV	0.014	0.0379	0.5	
Jetta Hybrid	EVWXV01.4PHE	Bin3/SULEV	0.005	0.0067	0.15	
Audi Q5 3.0L turbodiesel Auto	EADXJ03.04UG	Bin5/ULEV	0.032	0.0127	0.399	0.0013
Audi Q5 3.0L supercharged gasoline Auto	EADXJ03.03UF	Bin5/ULEV	0.038	0.0278	1.63	
Audi Q5 Hybrid 2.0Lturbo gasoline Auto	EADXT02.0HUB	Bin5/ULEV	0.039	0.0342	1.25	0.005
Cruze Diesel Auto	EGMXV02.0350	Bin5/LEV III LEV 160	0.03	0.017	0.1	0
Cruze 1.8L Auto	EGMXV01.8011	Bin 4	0.02	0.038	1.03	
Cruze 1.8L Auto	EGMXV01.8031	Bin3/LEV III SULEV 30	0.014	0.005	0.2	
Cruze Eco 1.4L Auto	BGMXV01.8011	Bin 4	0.03	0.051	1.2	
BMW 328d xDrive Sports Wagon 2.0L diesel Auto	EBMXV02.0N47	Bin5/ LEV	0.01	0.005	0.1	0.001
BMW 328i 2.0L turbo gas Auto( X3 xDrive28i was the test vehicle)	EBMXJ02.0N20	Bin5/ULEV	0.02	0.014	1.1	
Audi A8L 3.0L 6-cyl turbodiesel Auto	EADXJ03.04UG	Bin5/ULEV	0.035	0.021	0.3	0.003
Audi A8 3.0L 6-cyl supercharged gasoline Auto	EADXJ03.03UF	Bin5/ULEV	0.027	0.0278	1.63	
Audi A8L 4.0L 8-cyl turbo gasoline Auto (Bentley Continental GT was the test vehicle)	EADXV04.03UJ	Bin5/ULEV	0.038	0.0333	0.56	

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Fri 2/7/2014 9:37:56 PM  
**Subject:** DAILY: GM sweetens February incentives to juice U.S. sales | In Chicago, trucks get their mojo back | Will analysts ever be wrong? | U.S. senator warns automakers to cut risk of in-car mobile technology

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UPDATED: 2/7/14 1:39 pm ET

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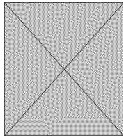
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5:19 pm U.S. ET | Feb 6

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3:56 pm U.S. ET | Feb 7

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8:24 am U.S. ET | Feb 7

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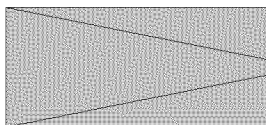
9:08 am U.S. ET | Feb 7

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### [American Axle cites Q4 gains in non-GM business](#)

9:54 am U.S. ET | Feb 7



» [2/11 - Mobile Shoppers](#) by Cars.com

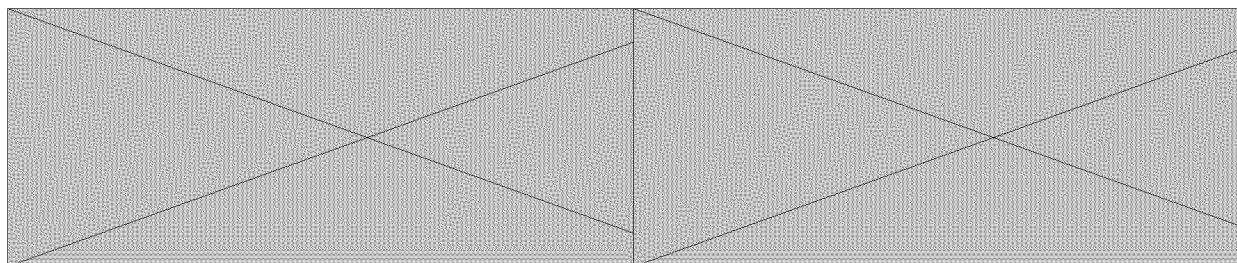
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- » [April 7, 2014 - PACE Awards](#)
- » [May 14 - Marketing Seminar - Los Angeles](#)
- » [June 3, 2014 - Rising Stars](#)
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..

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**From:** Linda Carrizosa  
**Sent:** Fri 2/7/2014 9:40:15 PM  
**Subject:** 2/4/14 ST Meeting Notes are now availalbe on MR

Good Afternoon Steering Team Member:

The Feb 4, 2014 ST Meeting notes (Draft 2014 Decision and Assignments) are now available on MR's and are available here: <http://cafcpmembers.org/membersonly/node/3671>

Thank you,

**Linda Carrizosa** | Administrative Assistant | CaFCP

D 916 371 2870 | F 916 375 8005 | [lcarrizosa@cafcf.org](mailto:lcarrizosa@cafcf.org)

3300 Industrial Blvd., Ste. 1000, West Sacramento, CA 95691 | [www.cafcf.com](http://www.cafcf.com)



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**From:** Linda Carrizosa  
**Sent:** Sat 2/8/2014 12:56:21 AM  
**Subject:** UPDATES to CaFCF March Working Group Meeting - March 12-13, 2014  
CSULA Campus Map- CAFCF MEETING LOCATION.PDF

Good Afternoon Working Group Members:

This email follows the updated meeting outlook invite, sent earlier today, for the upcoming March Working Group Meetings.

Please see the following details for your convenience:

**Location:**

California State University, Los Angeles  
Corporation Yard Building - Conference and Training Room 221  
5151 State University Dr.  
Los Angeles, CA 90032-8570

**Map:** See attached

**Agenda format:**

Day 1: Tues, March 12, 2014 – 9:00am to 5pm (Full day)

Day 2: Weds, March 13, 2014 – 8:30am to 12pm (1/2 day)

**Meeting Materials and other meeting details:**

These will be sent out as soon as they become available.

Thank you,

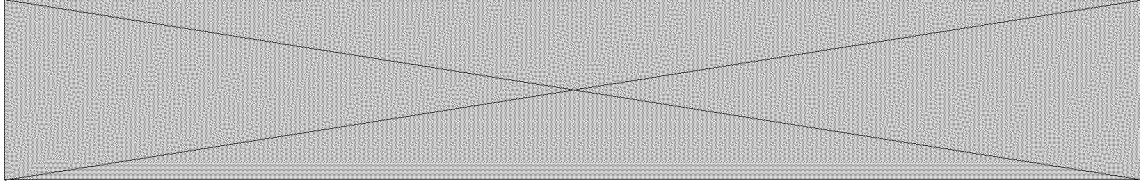
**Linda Carrizosa** | Administrative Assistant | CaFCP

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**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Mon 2/10/2014 5:04:03 PM  
**Subject:** Green Car Report Daily Headlines

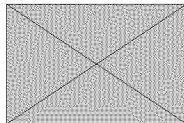
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The latest from your friends at GCR:

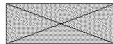
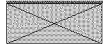
## [Tesla Model X Details, Audi Quattro Hybrid, Nissan's Other Green Cars: Today's Car News](#)

Feb 10, 2014 04:03 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



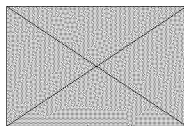
Today on Green Car Reports: Tesla Motors CEO Elon Musk reveals details of the Model X electric crossover and some future Model S upgrades, Audi files patents for a hybrid all-wheel drive system and more-aerodynamic wheels, and Nissan's green-car plans don't include plug-in hybrids. All this and more on Green Car Reports. BMW advertises the i3 and...

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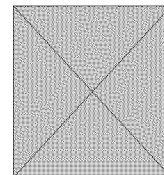
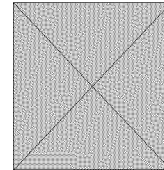
## [2014 Cadillac ELR Ad: What Does It Say About Who Buys Electric Cars? \(Video\)](#)

Feb 10, 2014 03:06 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



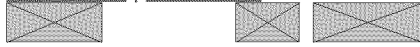
Well, if this is the guy who's actually going to buy a 2014 Cadillac ELR, there may be some interesting conversations to come with Nissan Leaf owners. This ELR driver is a hard-charging, self-assured, contemptuous-of-vacations, modern-home-owning middle-aged white male,

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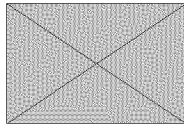
as portrayed in a recent video for the new luxury range-extended electric...

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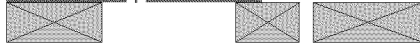
## Nissan's Greener Non-Electric Cars: Hybrids, Diesels, But No Plug-In Hybrids?

Feb 10, 2014 02:10 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



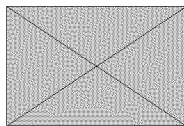
In the world of green cars, Nissan is best known for its Leaf electric car--which is the world's best-selling electric vehicle ever, with more than 100,000 delivered. But like any global automaker, Nissan is pursuing a variety of powertrain and other technologies to boost the efficiency of all its vehicles. At last month's Detroit Auto Show, Green...

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## Plug-in Electric Car Sales in Canada, Jan 2014: Another Chevy-Tesla Tossup?

Feb 10, 2014 01:20 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Matthew Klippenstein)



The new year started out positively for Canadian electric-vehicle advocates, as government registration data showed Canadian plug-in electric vehicle sales topped 3,100 vehicles last year, representing a 58-percent increase over 2012. MORE: Plug-In Electric Car Sales In Canada In 2013: Up 50 Percent Unfortunately, it looks as if the province of...

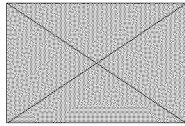
[comments](#) | [read more](#)



## Audi Quattro Hybrid System, Aero-Efficient Wheels Revealed In Patents

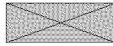
Feb 10, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)

(Antony Ingram)



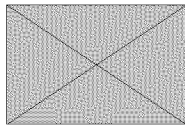
Audi is launching a technological offensive over the next few years, and among its innovations are a new hybrid powertrain and a wheel design featuring active aerodynamics. The details were revealed in patent drawings, and were spotted by Autocar. Most complex, though perhaps most interesting, is Audi's patent for a new hybrid system. At first...

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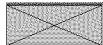
## Yet Another Electric-Car Condition: Now We Have 'Charger Fixation'

Feb 10, 2014 12:40 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



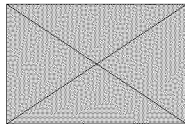
First came range anxiety. Then, we had charger rage. Now, people are noticing another condition unique to plug-in car owners: Charger fixation. It's what happens when you plug in your electric car at every single opportunity you get--and particularly if the charging is free. According to Orange County Register, it's something several plug-in car...

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## Elon Musk Talks Tesla Model X Details, Model S Upgrades, At Europe Q+A Sessions

Feb 10, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(David Noland)



Tesla Motors is notoriously stingy with information about its cars and future plans, to the great frustration of news-hungry Model S owners and fans. But in a Q & A session in Norway on February 1, Tesla CEO Elon Musk and the company's CTO JB Straubel revealed several intriguing tidbits about the Model S, the upcoming Model X electric SUV, and...

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**To:** Good, David[good.david@epa.gov]  
**Cc:** David Robertson[DRobertson@mazdausa.com]  
**From:** Naoyasu Okawa  
**Sent:** Mon 2/10/2014 5:51:33 PM  
**Subject:** RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc.

Hi Dave,

We look at the update although, the update below requires us to enter CH4 standard but we understand that there would be no CH4 standard if we selected OPT-CREE.

Therefore if we select OPT-CREE, we do not need to enter CH4 standard into Verify and the standard will leave blank, correct ?

Also, will the Verify system accept data submission or accept without considering a failure even CH4 standard leaves blank, correct ?

If leaving blank has any trouble for the data submission please advise us how we should enter CH4 standard when selecting OPT-CREE.

We would like to confirm beforehand if our method where CH4 standard leaves blank would not cause any issue when submitting data into Verify.

Also, If we should ask this questions to Verify team, please let me know and then I will ask them.

Best Regards,

Nick

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Friday, January 31, 2014 1:37 PM  
**To:** mb-nathan-hinderer ; william.meschievitz@tema.toyota.com; tommy\_chang@ahm.honda.com; JRugge@subaru.com; Naoyasu Okawa; dennis.pawlak@na.mitsubishi-motors.com;

KhanF@NRD.NISSAN-USA.COM; Tobias Glas; Peace O Uwague; rds116@chrysler.com; ghall12@jaguarlandrover.com; rbarre20@volvocars.com; Beth Borland ; Mark M Poll; christopher.cislo@gm.com; ross.gatzke@porsche.us; balsip@suz.com; Lindsey Jeng  
**Cc:** Dave Barker; peter\_meier@ahm.honda.com; tom.beierschmitt@tema.toyota.com; David Robertson; david.patterson@na.mitsubishi-motors.com; yamaday@ntcna.nissan-usa.com; oliver.schmidt@vw.com; Andrea.Antholzner@bmwna.com; vvarjabe@jaguar.com; vvarjabe@jaguarlandrover.com; brian.fitzgerald@daimler.com; gbuffali@volvocars.com; ml90@chrysler.com; tfagerma@ford.com; randall.c.harvey@gm.com; David Geiger; walter.lewis@porsche.us; luis.hernandez@suz.com; Tony D'Ambrosi; Peavyhouse, Robert; French, Roberts; Wehrly, Linc; Wright, DavidA; Snyder, Jim; Ball, Joel; Anderson, Tom; Dalton, Joel; Ott, William  
**Subject:** RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc.

To all manufacturers IUVP contacts,

Please note that in Verify Release 13.1 (deployed Jan 24, 2014) that EPA has added two new Test Result/Emission Names which can be used in Verify's IUVP Module only. The new test result/emission names are "Combined CREE" and "Combined OPT-CREE."

Please begin using these IUVP emission names as soon as possible (and don't use the work-around method of entering IUVP combined CREE/OCREE data). [Thanks much for using the "work-around" method of entering combined CREE IUVP data over the past few months.] If you used the "work-around method" of entering CREE/OCREE data, it is not necessary to correct previously entered IUVP data using the new test result/emission names.

Please enter the appropriate Combined CREE or Combined OPT-CREE test results along with the appropriate Combined CREE or Combined OPT-CREE in-use standard, pass/fail results, etc. for the highway test only. As a reminder, individual in-use GHG standards for specific in-use vehicles are required to be included in the manufacturer's final CAFE/GHG model year report, ref. 40 CFR 86.1818-12(d); and 40 CFR 600.512-12(c)(11).

As of the first week in January, 2014, some manufacturers have not been entering CREE/OCREE data and/or CH4 data into Verify for 2012 IUVP tests. In addition, some manufacturers seem to be missing 2012 low mileage IUVP data for some of their 2012 test groups. Please double check on the status of your 2012 IUVP program and let Bill Pidgeon ([pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)) and I know if your program is running late. I will try to send manufacturers with missing data a follow-up email message in the next few days.

Tips for entering IUVP data:

1. Please enter Combined CREE or Combined OPT-CREE test results (weighted 55% city and 45% highway) for the highway test procedure only.
2. Please do not enter both Combined CREE and Combined OPT-CREE values. Enter either CREE or OPT-CREE values which are consistent with the way you submitted data in your CAFE/GHG model year report for the applicable model year.
3. Please enter CH4 test results, standards, pass/fail results on the FTP test only.
4. Please enter N2O test results, standards, pass/fail results on the FTP test only if you actually measured N2O---e.g. don't enter the default 0.010 N2O values.

Reminders:

1. 2012 IUVP low mileage testing was required to be completed by Dec 31, 2013 and data submitted to EPA's Verify database prior to Jan 31, 2014, ref. 40 CFR 86.1845-04(b)(4) and 86.1847(b). EPA has extended the window in Verify to Feb 28, 2014 for reporting and correcting 2012 model year low mileage IUVP test data. Please contact Bill Pidgeon by email or at 734-214-4416 if you need to submit data to Verify after that date.
2. When entering IUVP data in Verify, please check your Verify mailbox to make sure that the data was accepted by Verify.

Thanks much.

Please call contact me at 734-214-4450 or by email if you have any questions.

Dave



**To:** Wick, Anne[Wick.Anne@epa.gov]; Klepp, Robert[Klepp.Robert@epa.gov]; Choi, Jake[Choi.Jake@epa.gov]; Kaul, Meetu[Kaul.Meetu@epa.gov]  
**From:** Miller, Anthony  
**Sent:** Mon 2/10/2014 5:56:10 PM  
**Subject:** RE: Defeat Device penalty framework discussion  
Defeat Device Penalty Policy New Option 02.07.14.docx  
Defeat Device New Option 02.10.14.pdf

Hi Everyone,

Please see attached documents for today's discussion. I've also set up a web conference if someone can set up their laptop in the conference room so we can play with the numbers if needed.

Web Conference URL:

**Ex. 6**

Tony Miller  
Chemical Engineer  
OECA/AED/Western Field Office (8MSU)  
1595 Wynkoop Street, Rm 2222  
Denver, Colorado 80202

Tel: 303-312-7161

Fax: 303-312-6003

Do not release this email. This is deliberative process privileged and may be confidential attorney-client communication.

-----Original Appointment-----

**From:** Wick, Anne

**Sent:** Monday, February 03, 2014 12:42 PM

**To:** Wick, Anne; Klepp, Robert; Miller, Anthony; Choi, Jake; Kaul, Meetu

**Subject:** Defeat Device penalty framework discussion

**When:** Monday, February 10, 2014 2:00 PM-3:00 PM (UTC-07:00) Mountain Time (US & Canada).

**Where:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Snyder, Jim  
**Sent:** Tue 2/11/2014 1:31:06 PM  
**Subject:** FW: VW driver trace request.  
[D220140038006testsae.xls](#)  
[D220140038005testsae.xls](#)  
[D220140038004testsae.xls](#)

**From:** Courtois, William  
**Sent:** Monday, February 10, 2014 2:57 PM  
**To:** Snyder, Jim  
**Subject:** RE: VW driver trace request.

Jim,

Three files are attached.

The file format has been changed to the SAE J 2951 format. We can send the old format files if preferred.

Let me know if there are any concerns regarding these files.

Bill Courtois

**From:** Snyder, Jim  
**Sent:** Monday, February 10, 2014 12:28 PM  
**To:** Courtois, William  
**Subject:** VW driver trace request.

Hi Bill, VW has requested the driver's trace for the test's on their Audi A3, vehicle# FAPA-AAF. I will request that they submit their trace to us also.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

Test Facility	EPA_NVFEL	Time	Cycle ID	VROLL_i	VSCHED_i
Manufacturer	see test report		0	0	-0.021
Model	-		0.1	0	-0.021
Vehicle ID	FAPA-AAF		0.2	0	-0.021
Veh Config	1		0.3	0	-0.021
Test Date	41668		0.4	0	-0.021
Test Type	US06		0.5	0	-0.021
Test ID	140038006		0.6	0	-0.021
ETW (lbs)	3500		0.7	0	-0.021
F0 (lbf)	35.97		0.8	0	-0.021
F1 (lbf/mph)	0.1447		0.9	0	-0.021
F2 (lbf/mph)	0.01612		1	0	-0.021
Speed Units	mph		1.1	0	-0.021
Regen Brake	N		1.2	0	-0.021
Dyno ID	D002		1.3	0	-0.021
			1.4	0	-0.021
			1.5	0	-0.021
			1.6	0	-0.021
			1.7	0	-0.021
			1.8	0	-0.021
			1.9	0	-0.021
			2	0	-0.021
			2.1	0	-0.021
			2.2	0	-0.021
			2.3	0	-0.021
			2.4	0	-0.021
			2.5	0	-0.021
			2.6	0	-0.021
			2.7	0	-0.021
			2.8	0	-0.021
			2.9	0	-0.021
			3	0	-0.021
			3.1	0	-0.021
			3.2	0	-0.021
			3.3	0	-0.021
			3.4	0	-0.021
			3.5	0	-0.021
			3.6	0	-0.021
			3.7	0	-0.021
			3.8	0	-0.021
			3.9	0	-0.021
			4	0	-0.021
			4.1	0	-0.021
			4.2	0	-0.021
			4.3	0	-0.021



4.4	0	-0.021	0
4.5	0	-0.021	0
4.6	0	-0.021	0
4.7	0	-0.021	0
4.8	0	-0.021	0
4.9	0	-0.021	0
5	0	0	0
5.1	0	-0.021	0.01
5.2	0	-0.021	0.03
5.3	0	-0.021	0.05
5.4	0	-0.021	0.07
5.5	0	-0.021	0.09
5.6	0	0	0.11
5.7	0	-0.021	0.13
5.8	0	-0.021	0.15
5.9	0	-0.021	0.17
6	0	-0.021	0.19
6.1	0	-0.021	0.226
6.2	0	-0.021	0.275
6.3	0	0	0.325
6.4	0	0	0.375
6.5	0	0.021	0.425
6.6	0	0.021	0.475
6.7	0	0.021	0.525
6.8	0	0.021	0.575
6.9	0	0.042	0.625
7	0	0.042	0.675
7.1	0	0.021	0.72
7.2	0	0.042	0.76
7.3	0	0.042	0.8
7.4	0	0.021	0.84
7.5	0	0.042	0.88
7.6	0	0.063	0.92
7.7	0	0.168	0.96
7.8	0	0.356	1
7.9	0	0.356	1.04
8	0	0.796	1.08
8.1	0	0.943	1.131
8.2	0	1.068	1.19
8.3	0	1.194	1.25
8.4	0	1.194	1.311
8.5	0	1.403	1.37
8.6	0	1.529	1.431
8.7	0	1.655	1.49
8.8	0	1.655	1.55

8.9	0	1.801	1.611
9	0	2.137	1.67
9.1	0	2.325	1.919
9.2	0	2.535	2.345
9.3	0	2.535	2.775
9.4	0	2.807	3.209
9.5	0	3.498	3.635
9.6	0	3.938	4.069
9.7	0	3.938	4.495
9.8	0	4.399	4.925
9.9	0	4.881	5.359
10	0	5.907	5.785
10.1	0	6.431	6.403
10.2	0	6.431	7.185
10.3	0	6.975	7.975
10.4	0	7.52	8.773
10.5	0	8.609	9.555
10.6	0	8.609	10.353
10.7	0	9.175	11.135
10.8	0	9.719	11.925
10.9	0	10.264	12.723
11	0	11.374	13.505
11.1	0	11.374	14.237
11.2	0	11.919	14.89
11.3	0	12.484	15.55
11.4	0	13.05	16.217
11.5	0	13.594	16.87
11.6	0	14.139	17.537
11.7	0	14.684	18.19
11.8	0	15.249	18.85
11.9	0	15.794	19.517
12	0	16.339	20.17
12.1	0	16.883	20.765
12.2	0	17.428	21.28
12.3	0	17.972	21.8
12.4	0	18.517	22.325
12.5	0	19.062	22.84
12.6	0	19.606	23.365
12.7	0	20.13	23.88
12.8	0	20.674	24.4
12.9	0	21.219	24.925
13	0	21.743	25.44
13.1	0	22.287	25.664
13.2	0	22.811	25.595
13.3	0	23.356	25.525

13.4	0	23.879	25.454
13.5	0	24.403	25.385
13.6	0	24.948	25.314
13.7	0	25.471	25.245
13.8	0	25.995	25.175
13.9	0	26.519	25.104
14	0	27.042	25.035
14.1	0	27.545	25.173
14.2	0	28.048	25.51
14.3	0	28.509	25.85
14.4	0	28.865	26.193
14.5	0	29.053	26.53
14.6	0	28.928	26.873
14.7	0	28.571	27.21
14.8	0	28.362	27.55
14.9	0	28.53	27.893
15	0	28.928	28.23
15.1	0	29.409	28.599
15.2	0	29.891	28.985
15.3	0	30.373	29.375
15.4	0	30.855	29.769
15.5	0	31.315	30.155
15.6	0	31.797	30.549
15.7	0	32.258	30.935
15.8	0	32.719	31.325
15.9	0	33.201	31.719
16	0	33.703	32.105
16.1	0	33.703	32.417
16.2	0	34.709	32.645
16.3	0	35.044	32.875
16.4	0	35.191	33.107
16.5	0	35.463	33.335
16.6	0	35.735	33.567
16.7	0	35.735	33.795
16.8	0	36.133	34.025
16.9	0	36.364	34.257
17	0	36.615	34.485
17.1	0	36.615	34.697
17.2	0	37.16	34.885
17.3	0	37.474	35.075
17.4	0	37.788	35.267
17.5	0	38.102	35.455
17.6	0	38.102	35.647
17.7	0	38.521	35.835
17.8	0	38.647	36.025

17.9	0	38.752	36.217
18	0	38.752	36.405
18.1	0	38.877	36.597
18.2	0	39.275	36.785
18.3	0	39.422	36.975
18.4	0	39.422	37.167
18.5	0	39.589	37.355
18.6	0	39.883	37.547
18.7	0	40.008	37.735
18.8	0	40.176	37.925
18.9	0	40.176	38.117
19	0	40.323	38.305
19.1	0	40.553	38.477
19.2	0	40.658	38.625
19.3	0	40.658	38.775
19.4	0	40.742	38.927
19.5	0	40.846	39.075
19.6	0	41.077	39.227
19.7	0	41.077	39.375
19.8	0	41.181	39.525
19.9	0	41.307	39.677
20	0	41.538	39.825
20.1	0	41.642	40.017
20.2	0	41.642	40.245
20.3	0	41.768	40.475
20.4	0	41.894	40.707
20.5	0	42.145	40.935
20.6	0	42.145	41.167
20.7	0	42.292	41.395
20.8	0	42.417	41.625
20.9	0	42.564	41.857
21	0	42.711	42.085
21.1	0	42.857	42.282
21.2	0	43.004	42.44
21.3	0	43.129	42.6
21.4	0	43.276	42.762
21.5	0	43.423	42.92
21.6	0	43.548	43.082
21.7	0	43.695	43.24
21.8	0	43.842	43.4
21.9	0	43.967	43.562
22	0	44.093	43.72
22.1	0	44.24	43.82
22.2	0	44.344	43.86
22.3	0	44.449	43.9

22.4	0	44.533	43.94
22.5	0	44.617	43.98
22.6	0	44.68	44.02
22.7	0	44.7	44.06
22.8	0	44.7	44.1
22.9	0	44.68	44.14
23	0	44.638	44.18
23.1	0	44.596	44.159
23.2	0	44.533	44.08
23.3	0	44.491	44
23.4	0	44.407	43.919
23.5	0	44.344	43.84
23.6	0	44.282	43.759
23.7	0	44.219	43.68
23.8	0	44.135	43.6
23.9	0	44.072	43.519
24	0	43.988	43.44
24.1	0	43.904	43.359
24.2	0	43.821	43.28
24.3	0	43.737	43.2
24.4	0	43.632	43.119
24.5	0	43.548	43.04
24.6	0	43.465	42.959
24.7	0	43.36	42.88
24.8	0	43.234	42.8
24.9	0	43.088	42.719
25	0	42.941	42.64
25.1	0	42.773	42.483
25.2	0	42.564	42.255
25.3	0	42.333	42.025
25.4	0	42.082	41.793
25.5	0	41.831	41.565
25.6	0	41.579	41.333
25.7	0	41.349	41.105
25.8	0	41.077	40.875
25.9	0	40.846	40.643
26	0	40.595	40.415
26.1	0	40.364	40.244
26.2	0	40.113	40.135
26.3	0	39.883	40.025
26.4	0	39.673	39.914
26.5	0	39.506	39.805
26.6	0	39.506	39.694
26.7	0	39.233	39.585
26.8	0	39.129	39.475

26.9	0	39.045	39.364
27	0	39.045	39.255
27.1	0	38.898	39.159
27.2	0	38.814	39.08
27.3	0	38.731	39
27.4	0	38.731	38.919
27.5	0	38.668	38.84
27.6	0	38.563	38.759
27.7	0	38.521	38.68
27.8	0	38.479	38.6
27.9	0	38.479	38.519
28	0	38.458	38.44
28.1	0	38.437	38.4
28.2	0	38.416	38.4
28.3	0	38.416	38.4
28.4	0	38.416	38.4
28.5	0	38.395	38.4
28.6	0	38.416	38.4
28.7	0	38.416	38.4
28.8	0	38.416	38.4
28.9	0	38.437	38.4
29	0	38.479	38.4
29.1	0	38.479	38.441
29.2	0	38.479	38.52
29.3	0	38.542	38.6
29.4	0	38.605	38.681
29.5	0	38.71	38.76
29.6	0	38.71	38.841
29.7	0	38.773	38.92
29.8	0	38.814	39
29.9	0	38.919	39.081
30	0	38.919	39.16
30.1	0	38.94	39.18
30.2	0	38.982	39.14
30.3	0	38.982	39.1
30.4	0	38.94	39.06
30.5	0	38.94	39.02
30.6	0	38.898	38.98
30.7	0	38.856	38.94
30.8	0	38.814	38.9
30.9	0	38.773	38.86
31	0	38.71	38.82
31.1	0	38.668	38.8
31.2	0	38.605	38.8
31.3	0	38.563	38.8

31.4	0	38.5	38.8
31.5	0	38.458	38.8
31.6	0	38.416	38.8
31.7	0	38.375	38.8
31.8	0	38.312	38.8
31.9	0	38.27	38.8
32	0	38.207	38.8
32.1	0	38.144	38.683
32.2	0	38.018	38.455
32.3	0	37.809	38.225
32.4	0	37.474	37.993
32.5	0	37.076	37.765
32.6	0	36.636	37.533
32.7	0	36.196	37.305
32.8	0	35.756	37.075
32.9	0	35.316	36.843
33	0	34.876	36.615
33.1	0	34.437	36.286
33.2	0	34.018	35.87
33.3	0	33.641	35.45
33.4	0	33.264	35.026
33.5	0	32.866	34.61
33.6	0	32.447	34.186
33.7	0	32.028	33.77
33.8	0	31.609	33.35
33.9	0	31.211	32.926
34	0	30.834	32.51
34.1	0	30.457	32.06
34.2	0	30.059	31.595
34.3	0	29.661	31.125
34.4	0	29.263	30.65
34.5	0	28.823	30.185
34.6	0	28.341	29.71
34.7	0	27.859	29.245
34.8	0	27.357	28.775
34.9	0	26.896	28.3
35	0	26.477	27.835
35.1	0	26.058	27.33
35.2	0	26.058	26.805
35.3	0	25.241	26.275
35.4	0	24.822	25.74
35.5	0	24.403	25.215
35.6	0	23.984	24.68
35.7	0	23.565	24.155
35.8	0	23.125	23.625

35.9	0	22.706	23.09
36	0	22.266	22.565
36.1	0	22.266	22.045
36.2	0	21.366	21.55
36.3	0	20.905	21.05
36.4	0	20.444	20.545
36.5	0	20.444	20.05
36.6	0	20.004	19.545
36.7	0	19.145	19.05
36.8	0	18.747	18.55
36.9	0	18.328	18.045
37	0	18.328	17.55
37.1	0	17.532	17.004
37.2	0	17.134	16.43
37.3	0	16.736	15.85
37.4	0	16.736	15.264
37.5	0	16.318	14.69
37.6	0	15.291	14.104
37.7	0	14.747	13.53
37.8	0	14.747	12.95
37.9	0	14.286	12.364
38	0	13.846	11.79
38.1	0	12.882	11.209
38.2	0	12.38	10.645
38.3	0	12.38	10.075
38.4	0	11.877	9.499
38.5	0	11.332	8.935
38.6	0	10.159	8.359
38.7	0	10.159	7.795
38.8	0	9.468	7.225
38.9	0	8.672	6.649
39	0	7.876	6.085
39.1	0	6.263	5.565
39.2	0	6.263	5.11
39.3	0	5.467	4.65
39.4	0	4.65	4.185
39.5	0	2.953	3.73
39.6	0	2.953	3.265
39.7	0	2.074	2.81
39.8	0	1.194	2.35
39.9	0	0.566	1.885
40	0	0.398	1.43
40.1	0	0.335	1.139
40.2	0	0.189	1.02
40.3	0	0.168	0.9



40.4	0	0.189	0.779
40.5	0	0.147	0.66
40.6	0	0.084	0.539
40.7	0	0.126	0.42
40.8	0	0.147	0.3
40.9	0	0.084	0.179
41	0	0.063	0.06
41.1	0	0.105	0
41.2	0	0.084	0
41.3	0	0.042	0
41.4	0	0.063	0
41.5	0	0.063	0
41.6	0	0.021	0
41.7	0	0.021	0
41.8	0	0.042	0
41.9	0	0.021	0
42	0	0.021	0
42.1	0	0.021	0
42.2	0	0	0
42.3	0	0	0
42.4	0	0	0
42.5	0	0	0
42.6	0	0	0
42.7	0	0	0
42.8	0	0	0
42.9	0	0	0
43	0	0	0
43.1	0	0	0
43.2	0	0	0
43.3	0	0	0
43.4	0	0	0
43.5	0	0	0
43.6	0	0	0
43.7	0	0	0
43.8	0	0	0
43.9	0	0	0
44	0	0	0
44.1	0	0	0
44.2	0	0	0
44.3	0	0	0
44.4	0	0	0
44.5	0	0	0
44.6	0	0	0
44.7	0	0	0
44.8	0	0	0

44.9	0	0	0
45	0	0	0
45.1	0	0	0
45.2	0	0	0
45.3	0	0	0
45.4	0	0	0
45.5	0	0	0
45.6	0	0	0
45.7	0	0	0
45.8	0	0	0
45.9	0	0	0
46	0	0	0
46.1	0	0	0
46.2	0	0	0
46.3	0	0	0
46.4	0	0	0
46.5	0	0	0
46.6	0	0	0
46.7	0	0.021	0
46.8	0	0.042	0
46.9	0	0.042	0
47	0	0.042	0
47.1	0	0.042	0
47.2	0	0.063	0
47.3	0	0.063	0
47.4	0	0.063	0
47.5	0	0.063	0
47.6	0	0.084	0
47.7	0	0.084	0
47.8	0	0.105	0
47.9	0	0.105	0
48	0	0.126	0
48.1	0	0.189	0.041
48.2	0	0.314	0.12
48.3	0	0.691	0.2
48.4	0	0.691	0.281
48.5	0	0.922	0.36
48.6	0	1.194	0.441
48.7	0	1.487	0.52
48.8	0	1.801	0.6
48.9	0	2.137	0.681
49	0	2.472	0.76
49.1	0	2.828	1.228
49.2	0	3.624	2.06
49.3	0	3.624	2.9

49.4	0	4.043	3.748
49.5	0	4.483	4.58
49.6	0	4.985	5.428
49.7	0	5.509	6.26
49.8	0	6.054	7.1
49.9	0	6.598	7.948
50	0	7.143	8.78
50.1	0	7.708	9.491
50.2	0	8.253	10.055
50.3	0	8.819	10.625
50.4	0	9.384	11.201
50.5	0	9.929	11.765
50.6	0	10.473	12.341
50.7	0	10.997	12.905
50.8	0	11.479	13.475
50.9	0	11.961	14.051
51	0	12.442	14.615
51.1	0	12.924	15.068
51.2	0	13.427	15.395
51.3	0	13.93	15.725
51.4	0	14.432	16.058
51.5	0	14.956	16.385
51.6	0	15.48	16.718
51.7	0	16.024	17.045
51.8	0	16.569	17.375
51.9	0	17.114	17.708
52	0	17.679	18.035
52.1	0	18.224	18.404
52.2	0	18.789	18.8
52.3	0	19.355	19.2
52.4	0	19.92	19.604
52.5	0	20.486	20
52.6	0	21.052	20.404
52.7	0	21.596	20.8
52.8	0	22.078	21.2
52.9	0	22.497	21.604
53	0	22.874	22
53.1	0	23.23	22.455
53.2	0	23.586	22.95
53.3	0	23.921	23.45
53.4	0	24.235	23.955
53.5	0	24.571	24.45
53.6	0	24.885	24.955
53.7	0	25.199	25.45
53.8	0	25.555	25.95

53.9	0	25.89	26.455
54	0	26.225	26.95
54.1	0	26.581	27.414
54.2	0	26.959	27.83
54.3	0	27.336	28.25
54.4	0	27.734	28.674
54.5	0	27.734	29.09
54.6	0	28.571	29.514
54.7	0	28.99	29.93
54.8	0	29.409	30.35
54.9	0	29.849	30.774
55	0	29.849	31.19
55.1	0	30.289	31.522
55.2	0	31.169	31.76
55.3	0	31.609	32
55.4	0	31.609	32.242
55.5	0	32.049	32.48
55.6	0	32.928	32.722
55.7	0	33.389	32.96
55.8	0	33.829	33.2
55.9	0	33.829	33.442
56	0	34.248	33.68
56.1	0	35.107	33.973
56.2	0	35.547	34.31
56.3	0	35.547	34.65
56.4	0	35.966	34.993
56.5	0	36.783	35.33
56.6	0	37.16	35.673
56.7	0	37.495	36.01
56.8	0	37.495	36.35
56.9	0	37.83	36.693
57	0	38.416	37.03
57.1	0	38.668	37.384
57.2	0	38.668	37.74
57.3	0	38.877	38.1
57.4	0	39.108	38.464
57.5	0	39.527	38.82
57.6	0	39.527	39.184
57.7	0	39.757	39.54
57.8	0	39.966	39.9
57.9	0	40.197	40.264
58	0	40.637	40.62
58.1	0	40.637	40.963
58.2	0	40.867	41.28
58.3	0	41.098	41.6

58.4	0	41.307	41.923
58.5	0	41.538	42.24
58.6	0	41.768	42.563
58.7	0	41.977	42.88
58.8	0	42.208	43.2
58.9	0	42.648	43.523
59	0	42.648	43.84
59.1	0	42.878	44.117
59.2	0	43.109	44.345
59.3	0	43.339	44.575
59.4	0	43.548	44.807
59.5	0	43.779	45.035
59.6	0	43.988	45.267
59.7	0	44.219	45.495
59.8	0	44.47	45.725
59.9	0	44.7	45.957
60	0	44.952	46.185
60.1	0	45.203	46.366
60.2	0	45.455	46.495
60.3	0	45.706	46.625
60.4	0	45.978	46.756
60.5	0	46.251	46.885
60.6	0	46.523	47.016
60.7	0	46.795	47.145
60.8	0	47.067	47.275
60.9	0	47.34	47.406
61	0	47.612	47.535
61.1	0	47.884	47.697
61.2	0	48.157	47.885
61.3	0	48.408	48.075
61.4	0	48.659	48.267
61.5	0	48.89	48.455
61.6	0	49.12	48.647
61.7	0	49.309	48.835
61.8	0	49.497	49.025
61.9	0	49.686	49.217
62	0	49.832	49.405
62.1	0	49.979	49.587
62.2	0	50.126	49.755
62.3	0	50.272	49.925
62.4	0	50.419	50.097
62.5	0	50.545	50.265
62.6	0	50.691	50.437
62.7	0	50.838	50.605
62.8	0	50.964	50.775

62.9	0	51.11	50.947
63	0	51.236	51.115
63.1	0	51.362	51.292
63.2	0	51.487	51.47
63.3	0	51.634	51.65
63.4	0	51.76	51.832
63.5	0	51.885	52.01
63.6	0	52.011	52.192
63.7	0	52.011	52.37
63.8	0	52.283	52.55
63.9	0	52.409	52.732
64	0	52.556	52.91
64.1	0	52.681	53.071
64.2	0	52.849	53.21
64.3	0	52.995	53.35
64.4	0	53.142	53.491
64.5	0	53.289	53.63
64.6	0	53.289	53.771
64.7	0	53.624	53.91
64.8	0	53.77	54.05
64.9	0	53.938	54.191
65	0	53.938	54.33
65.1	0	54.106	54.461
65.2	0	54.42	54.58
65.3	0	54.587	54.7
65.4	0	54.755	54.821
65.5	0	54.755	54.94
65.6	0	54.923	55.061
65.7	0	55.258	55.18
65.8	0	55.404	55.3
65.9	0	55.404	55.421
66	0	55.572	55.54
66.1	0	55.865	55.641
66.2	0	55.991	55.72
66.3	0	55.991	55.8
66.4	0	56.116	55.881
66.5	0	56.221	55.96
66.6	0	56.41	56.041
66.7	0	56.494	56.12
66.8	0	56.494	56.2
66.9	0	56.598	56.281
67	0	56.682	56.36
67.1	0	56.787	56.385
67.2	0	56.787	56.355
67.3	0	56.829	56.325

67.4	0	56.871	56.295
67.5	0	56.892	56.265
67.6	0	56.954	56.235
67.7	0	56.954	56.205
67.8	0	56.996	56.175
67.9	0	57.017	56.145
68	0	57.059	56.115
68.1	0	57.059	56.105
68.2	0	57.122	56.115
68.3	0	57.164	56.125
68.4	0	57.164	56.135
68.5	0	57.164	56.145
68.6	0	57.164	56.155
68.7	0	57.143	56.165
68.8	0	57.122	56.175
68.9	0	57.08	56.185
69	0	57.017	56.195
69.1	0	56.933	56.18
69.2	0	56.871	56.14
69.3	0	56.787	56.1
69.4	0	56.703	56.06
69.5	0	56.598	56.02
69.6	0	56.514	55.98
69.7	0	56.41	55.94
69.8	0	56.326	55.9
69.9	0	56.242	55.86
70	0	56.137	55.82
70.1	0	56.054	55.764
70.2	0	55.949	55.695
70.3	0	55.865	55.625
70.4	0	55.76	55.554
70.5	0	55.677	55.485
70.6	0	55.593	55.414
70.7	0	55.509	55.345
70.8	0	55.446	55.275
70.9	0	55.383	55.204
71	0	55.32	55.135
71.1	0	55.279	55.064
71.2	0	55.216	54.995
71.3	0	55.174	54.925
71.4	0	55.111	54.854
71.5	0	55.069	54.785
71.6	0	55.006	54.714
71.7	0	54.964	54.645
71.8	0	54.902	54.575

71.9	0	54.86	54.504
72	0	54.818	54.435
72.1	0	54.755	54.39
72.2	0	54.713	54.37
72.3	0	54.671	54.35
72.4	0	54.65	54.33
72.5	0	54.629	54.31
72.6	0	54.629	54.29
72.7	0	54.629	54.27
72.8	0	54.65	54.25
72.9	0	54.671	54.23
73	0	54.692	54.21
73.1	0	54.713	54.21
73.2	0	54.734	54.23
73.3	0	54.734	54.25
73.4	0	54.776	54.27
73.5	0	54.797	54.29
73.6	0	54.818	54.31
73.7	0	54.818	54.33
73.8	0	54.86	54.35
73.9	0	54.86	54.37
74	0	54.839	54.39
74.1	0	54.818	54.39
74.2	0	54.818	54.37
74.3	0	54.776	54.35
74.4	0	54.755	54.33
74.5	0	54.734	54.31
74.6	0	54.734	54.29
74.7	0	54.692	54.27
74.8	0	54.629	54.25
74.9	0	54.587	54.23
75	0	54.525	54.21
75.1	0	54.525	54.164
75.2	0	54.462	54.095
75.3	0	54.336	54.025
75.4	0	54.252	53.954
75.5	0	54.252	53.885
75.6	0	54.189	53.814
75.7	0	54.106	53.745
75.8	0	53.938	53.675
75.9	0	53.854	53.604
76	0	53.854	53.535
76.1	0	53.77	53.439
76.2	0	53.666	53.32
76.3	0	53.498	53.2



76.4	0	53.498	53.079
76.5	0	53.414	52.96
76.6	0	53.31	52.839
76.7	0	53.142	52.72
76.8	0	53.058	52.6
76.9	0	53.058	52.479
77	0	52.954	52.36
77.1	0	52.87	52.285
77.2	0	52.702	52.255
77.3	0	52.702	52.225
77.4	0	52.618	52.195
77.5	0	52.535	52.165
77.6	0	52.451	52.135
77.7	0	52.367	52.105
77.8	0	52.283	52.075
77.9	0	52.22	52.045
78	0	52.137	52.015
78.1	0	52.074	51.995
78.2	0	52.011	51.985
78.3	0	51.948	51.975
78.4	0	51.906	51.965
78.5	0	51.864	51.955
78.6	0	51.822	51.945
78.7	0	51.801	51.935
78.8	0	51.76	51.925
78.9	0	51.739	51.915
79	0	51.718	51.905
79.1	0	51.697	51.895
79.2	0	51.676	51.885
79.3	0	51.655	51.875
79.4	0	51.655	51.865
79.5	0	51.655	51.855
79.6	0	51.655	51.845
79.7	0	51.655	51.835
79.8	0	51.676	51.825
79.9	0	51.697	51.815
80	0	51.718	51.805
80.1	0	51.739	51.805
80.2	0	51.78	51.815
80.3	0	51.801	51.825
80.4	0	51.843	51.835
80.5	0	51.864	51.845
80.6	0	51.906	51.855
80.7	0	51.927	51.865
80.8	0	51.969	51.875

80.9	0	51.99	51.885
81	0	52.032	51.895
81.1	0	52.032	51.905
81.2	0	52.095	51.915
81.3	0	52.137	51.925
81.4	0	52.158	51.935
81.5	0	52.199	51.945
81.6	0	52.241	51.955
81.7	0	52.262	51.965
81.8	0	52.304	51.975
81.9	0	52.325	51.985
82	0	52.367	51.995
82.1	0	52.409	52.026
82.2	0	52.43	52.075
82.3	0	52.472	52.125
82.4	0	52.535	52.175
82.5	0	52.597	52.225
82.6	0	52.66	52.276
82.7	0	52.702	52.325
82.8	0	52.786	52.375
82.9	0	52.849	52.425
83	0	52.912	52.475
83.1	0	52.974	52.546
83.2	0	53.037	52.635
83.3	0	53.121	52.725
83.4	0	53.121	52.816
83.5	0	53.268	52.905
83.6	0	53.352	52.996
83.7	0	53.435	53.085
83.8	0	53.435	53.175
83.9	0	53.519	53.266
84	0	53.708	53.355
84.1	0	53.791	53.477
84.2	0	53.896	53.625
84.3	0	53.896	53.775
84.4	0	54.001	53.927
84.5	0	54.21	54.075
84.6	0	54.315	54.227
84.7	0	54.315	54.375
84.8	0	54.441	54.525
84.9	0	54.755	54.677
85	0	54.943	54.825
85.1	0	55.153	54.997
85.2	0	55.153	55.185
85.3	0	55.341	55.375

85.4	0	55.802	55.567
85.5	0	56.033	55.755
85.6	0	56.033	55.947
85.7	0	56.263	56.135
85.8	0	56.494	56.325
85.9	0	56.933	56.517
86	0	56.933	56.705
86.1	0	57.143	56.902
86.2	0	57.352	57.1
86.3	0	57.813	57.3
86.4	0	57.813	57.502
86.5	0	58.106	57.7
86.6	0	58.442	57.902
86.7	0	58.777	58.1
86.8	0	59.489	58.3
86.9	0	59.489	58.502
87	0	59.845	58.7
87.1	0	60.18	58.892
87.2	0	60.536	59.07
87.3	0	60.892	59.25
87.4	0	61.227	59.432
87.5	0	61.542	59.61
87.6	0	61.772	59.792
87.7	0	61.94	59.97
87.8	0	62.107	60.15
87.9	0	62.254	60.332
88	0	62.38	60.51
88.1	0	62.526	60.687
88.2	0	62.631	60.855
88.3	0	62.757	61.025
88.4	0	62.84	61.197
88.5	0	62.945	61.375
88.6	0	63.008	61.537
88.7	0	63.113	61.705
88.8	0	63.217	61.875
88.9	0	63.301	62.047
89	0	63.406	62.215
89.1	0	63.511	62.397
89.2	0	63.594	62.585
89.3	0	63.678	62.775
89.4	0	63.762	62.967
89.5	0	63.846	63.155
89.6	0	63.93	63.347
89.7	0	63.992	63.535
89.8	0	64.076	63.725

89.9	0	64.16	63.917
90	0	64.265	64.105
90.1	0	64.349	64.302
90.2	0	64.453	64.5
90.3	0	64.558	64.7
90.4	0	64.642	64.902
90.5	0	64.747	65.1
90.6	0	64.851	65.302
90.7	0	64.956	65.5
90.8	0	65.082	65.7
90.9	0	65.186	65.902
91	0	65.312	66.1
91.1	0	65.438	66.282
91.2	0	65.563	66.44
91.3	0	65.689	66.6
91.4	0	65.815	66.762
91.5	0	65.961	66.92
91.6	0	66.108	67.082
91.7	0	66.297	67.24
91.8	0	66.506	67.4
91.9	0	66.716	67.562
92	0	66.946	67.72
92.1	0	67.176	67.882
92.2	0	67.407	68.04
92.3	0	67.637	68.2
92.4	0	67.637	68.362
92.5	0	68.098	68.52
92.6	0	68.308	68.682
92.7	0	68.538	68.84
92.8	0	68.747	69
92.9	0	68.747	69.162
93	0	69.145	69.32
93.1	0	69.313	69.451
93.2	0	69.46	69.55
93.3	0	69.46	69.65
93.4	0	69.69	69.751
93.5	0	69.795	69.85
93.6	0	69.899	69.951
93.7	0	69.899	70.05
93.8	0	69.983	70.15
93.9	0	70.151	70.251
94	0	70.151	70.35
94.1	0	70.277	70.41
94.2	0	70.277	70.43
94.3	0	70.318	70.45

94.4	0	70.36	70.47
94.5	0	70.36	70.49
94.6	0	70.36	70.51
94.7	0	70.402	70.53
94.8	0	70.486	70.55
94.9	0	70.528	70.57
95	0	70.528	70.59
95.1	0	70.591	70.605
95.2	0	70.633	70.615
95.3	0	70.716	70.625
95.4	0	70.716	70.635
95.5	0	70.758	70.645
95.6	0	70.8	70.655
95.7	0	70.8	70.665
95.8	0	70.8	70.675
95.9	0	70.8	70.685
96	0	70.758	70.695
96.1	0	70.716	70.68
96.2	0	70.591	70.64
96.3	0	70.591	70.6
96.4	0	70.507	70.56
96.5	0	70.423	70.52
96.6	0	70.318	70.48
96.7	0	70.214	70.44
96.8	0	70.088	70.4
96.9	0	69.983	70.36
97	0	69.879	70.32
97.1	0	69.774	70.193
97.2	0	69.669	69.985
97.3	0	69.564	69.775
97.4	0	69.439	69.563
97.5	0	69.334	69.355
97.6	0	69.229	69.143
97.7	0	69.124	68.935
97.8	0	69.02	68.725
97.9	0	68.915	68.513
98	0	68.81	68.305
98.1	0	68.706	68.113
98.2	0	68.601	67.945
98.3	0	68.496	67.775
98.4	0	68.37	67.603
98.5	0	68.266	67.435
98.6	0	68.098	67.263
98.7	0	67.93	67.095
98.8	0	67.742	66.925

98.9	0	67.553	66.753
99	0	67.386	66.585
99.1	0	67.218	66.418
99.2	0	67.072	66.26
99.3	0	66.925	66.1
99.4	0	66.778	65.938
99.5	0	66.632	65.78
99.6	0	66.506	65.618
99.7	0	66.339	65.46
99.8	0	66.192	65.3
99.9	0	66.024	65.138
100	0	65.857	64.98
100.1	0	65.71	64.839
100.2	0	65.563	64.72
100.3	0	65.396	64.6
100.4	0	65.249	64.479
100.5	0	65.082	64.36
100.6	0	64.893	64.239
100.7	0	64.684	64.12
100.8	0	64.474	64
100.9	0	64.265	63.879
101	0	64.097	63.76
101.1	0	63.93	63.639
101.2	0	63.804	63.52
101.3	0	63.678	63.4
101.4	0	63.553	63.279
101.5	0	63.427	63.16
101.6	0	63.301	63.039
101.7	0	63.176	62.92
101.8	0	63.071	62.8
101.9	0	62.945	62.679
102	0	62.819	62.56
102.1	0	62.694	62.424
102.2	0	62.568	62.275
102.3	0	62.442	62.125
102.4	0	62.442	61.973
102.5	0	62.212	61.825
102.6	0	62.086	61.674
102.7	0	61.961	61.525
102.8	0	61.961	61.375
102.9	0	61.835	61.223
103	0	61.584	61.075
103.1	0	61.479	60.913
103.2	0	61.479	60.745
103.3	0	61.353	60.575

103.4	0	61.102	60.403
103.5	0	60.976	60.235
103.6	0	60.85	60.063
103.7	0	60.85	59.895
103.8	0	60.725	59.725
103.9	0	60.369	59.553
104	0	60.159	59.385
104.1	0	60.159	59.218
104.2	0	59.929	59.06
104.3	0	59.698	58.9
104.4	0	59.279	58.738
104.5	0	59.112	58.58
104.6	0	59.112	58.418
104.7	0	58.944	58.26
104.8	0	58.798	58.1
104.9	0	58.483	57.938
105	0	58.483	57.78
105.1	0	58.274	57.613
105.2	0	58.065	57.445
105.3	0	57.855	57.275
105.4	0	57.415	57.103
105.5	0	57.415	56.935
105.6	0	57.227	56.763
105.7	0	57.017	56.595
105.8	0	56.598	56.425
105.9	0	56.598	56.253
106	0	56.389	56.085
106.1	0	56.179	55.924
106.2	0	55.991	55.775
106.3	0	55.781	55.625
106.4	0	55.593	55.473
106.5	0	55.404	55.325
106.6	0	55.216	55.174
106.7	0	55.048	55.025
106.8	0	54.902	54.875
106.9	0	54.734	54.723
107	0	54.566	54.575
107.1	0	54.566	54.413
107.2	0	54.252	54.245
107.3	0	54.085	54.075
107.4	0	53.938	53.903
107.5	0	53.77	53.735
107.6	0	53.603	53.563
107.7	0	53.456	53.395
107.8	0	53.289	53.225

107.9	0	53.121	53.053
108	0	52.933	52.885
108.1	0	52.765	52.718
108.2	0	52.597	52.56
108.3	0	52.43	52.4
108.4	0	52.262	52.238
108.5	0	52.074	52.08
108.6	0	51.906	51.918
108.7	0	51.739	51.76
108.8	0	51.571	51.6
108.9	0	51.403	51.438
109	0	51.215	51.28
109.1	0	51.047	51.113
109.2	0	50.859	50.945
109.3	0	50.691	50.775
109.4	0	50.524	50.603
109.5	0	50.335	50.435
109.6	0	50.168	50.263
109.7	0	50	50.095
109.8	0	49.811	49.925
109.9	0	49.644	49.753
110	0	49.476	49.585
110.1	0	49.309	49.415
110.2	0	49.12	49.275
110.3	0	48.953	49.125
110.4	0	48.764	48.973
110.5	0	48.597	48.825
110.6	0	48.429	48.674
110.7	0	48.24	48.525
110.8	0	48.073	48.375
110.9	0	47.905	48.223
111	0	47.717	48.075
111.1	0	47.717	47.913
111.2	0	47.403	47.745
111.3	0	47.256	47.575
111.4	0	47.109	47.403
111.5	0	46.984	47.235
111.6	0	46.984	47.063
111.7	0	46.628	46.895
111.8	0	46.418	46.725
111.9	0	46.188	46.553
112	0	46.188	46.385
112.1	0	45.748	46.183
112.2	0	45.517	45.955
112.3	0	45.287	45.725



112.4	0	45.057	45.493
112.5	0	45.057	45.265
112.6	0	44.617	45.033
112.7	0	44.386	44.805
112.8	0	44.198	44.575
112.9	0	44.198	44.343
113	0	43.988	44.115
113.1	0	43.632	43.852
113.2	0	43.465	43.565
113.3	0	43.465	43.275
113.4	0	43.297	42.982
113.5	0	43.109	42.695
113.6	0	42.752	42.402
113.7	0	42.585	42.115
113.8	0	42.585	41.825
113.9	0	42.417	41.532
114	0	42.229	41.245
114.1	0	41.789	40.983
114.2	0	41.789	40.755
114.3	0	41.517	40.525
114.4	0	41.265	40.293
114.5	0	40.993	40.065
114.6	0	40.532	39.833
114.7	0	40.532	39.605
114.8	0	40.323	39.375
114.9	0	40.134	39.143
115	0	39.757	38.915
115.1	0	39.757	38.744
115.2	0	39.569	38.635
115.3	0	39.401	38.525
115.4	0	39.212	38.414
115.5	0	39.045	38.305
115.6	0	38.856	38.194
115.7	0	38.689	38.085
115.8	0	38.5	37.975
115.9	0	38.333	37.864
116	0	38.144	37.755
116.1	0	37.997	37.644
116.2	0	37.872	37.535
116.3	0	37.767	37.425
116.4	0	37.662	37.314
116.5	0	37.579	37.205
116.6	0	37.474	37.094
116.7	0	37.39	36.985
116.8	0	37.285	36.875

116.9	0	37.16	36.764
117	0	37.013	36.655
117.1	0	36.845	36.534
117.2	0	36.678	36.405
117.3	0	36.489	36.275
117.4	0	36.301	36.144
117.5	0	36.133	36.015
117.6	0	35.966	35.884
117.7	0	35.777	35.755
117.8	0	35.589	35.625
117.9	0	35.337	35.494
118	0	35.044	35.365
118.1	0	34.73	35.03
118.2	0	34.416	34.505
118.3	0	34.101	33.975
118.4	0	33.766	33.413
118.5	0	33.41	32.915
118.6	0	32.991	32.38
118.7	0	32.53	31.855
118.8	0	32.028	31.325
118.9	0	31.441	30.79
119	0	30.813	30.265
119.1	0	30.163	29.714
119.2	0	29.514	29.16
119.3	0	28.907	28.6
119.4	0	28.32	28.034
119.5	0	27.734	27.48
119.6	0	27.147	26.914
119.7	0	26.561	26.36
119.8	0	25.974	25.8
119.9	0	25.367	25.234
120	0	25.367	24.68
120.1	0	24.11	24.165
120.2	0	23.419	23.71
120.3	0	22.748	23.25
120.4	0	22.183	22.785
120.5	0	21.68	22.33
120.6	0	21.198	21.865
120.7	0	21.198	21.41
120.8	0	20.256	20.95
120.9	0	19.753	20.485
121	0	19.229	20.03
121.1	0	18.705	19.581
121.2	0	18.705	19.155
121.3	0	17.679	18.725

121.4	0	17.155	18.291
121.5	0	16.611	17.865
121.6	0	16.611	17.431
121.7	0	15.982	17.005
121.8	0	14.767	16.575
121.9	0	14.244	16.141
122	0	13.741	15.715
122.1	0	13.741	15.26
122.2	0	13.217	14.795
122.3	0	12.191	14.325
122.4	0	11.709	13.85
122.5	0	11.709	13.385
122.6	0	11.227	12.91
122.7	0	10.222	12.445
122.8	0	9.677	11.975
122.9	0	9.677	11.5
123	0	9.133	11.035
123.1	0	8.546	10.571
123.2	0	7.394	10.125
123.3	0	6.85	9.675
123.4	0	6.85	9.22
123.5	0	6.41	8.775
123.6	0	5.991	8.321
123.7	0	5.237	7.875
123.8	0	5.237	7.425
123.9	0	4.922	6.97
124	0	4.671	6.525
124.1	0	4.483	6.142
124.2	0	4.147	5.835
124.3	0	4.147	5.525
124.4	0	4.043	5.212
124.5	0	3.98	4.905
124.6	0	3.938	4.592
124.7	0	3.875	4.285
124.8	0	3.812	3.975
124.9	0	3.77	3.662
125	0	3.729	3.355
125.1	0	3.687	3.144
125.2	0	3.666	3.035
125.3	0	3.645	2.925
125.4	0	3.624	2.814
125.5	0	3.582	2.705
125.6	0	3.498	2.594
125.7	0	3.393	2.485
125.8	0	3.289	2.375

125.9	0	3.163	2.264
126	0	3.037	2.155
126.1	0	2.912	2.054
126.2	0	2.807	1.965
126.3	0	2.681	1.875
126.4	0	2.556	1.784
126.5	0	2.43	1.695
126.6	0	2.304	1.604
126.7	0	2.178	1.515
126.8	0	2.053	1.425
126.9	0	1.927	1.334
127	0	1.801	1.245
127.1	0	1.676	1.139
127.2	0	1.55	1.02
127.3	0	1.403	0.9
127.4	0	1.278	0.779
127.5	0	1.152	0.66
127.6	0	0.984	0.539
127.7	0	0.796	0.42
127.8	0	0.503	0.3
127.9	0	0.23	0.179
128	0	0.209	0.06
128.1	0	0.209	0
128.2	0	0.147	0
128.3	0	0.105	0
128.4	0	0.126	0
128.5	0	0.126	0
128.6	0	0.084	0
128.7	0	0.063	0
128.8	0	0.084	0
128.9	0	0.084	0
129	0	0.084	0
129.1	0	0.084	0
129.2	0	0.084	0
129.3	0	0.105	0
129.4	0	0.105	0
129.5	0	0.105	0
129.6	0	0.105	0
129.7	0	0.126	0
129.8	0	0.126	0
129.9	0	0.126	0
130	0	0.126	0
130.1	0	0.126	0
130.2	0	0.126	0
130.3	0	0.147	0

130.4	0	0.147	0
130.5	0	0.147	0
130.6	0	0.147	0
130.7	0	0.147	0
130.8	0	0.147	0
130.9	0	0.147	0
131	0	0.147	0
131.1	0	0.147	0
131.2	0	0.147	0
131.3	0	0.147	0
131.4	0	0.168	0
131.5	0	0.168	0
131.6	0	0.168	0
131.7	0	0.168	0
131.8	0	0.168	0
131.9	0	0.168	0
132	0	0.168	0
132.1	0	0.168	0
132.2	0	0.168	0
132.3	0	0.168	0
132.4	0	0.168	0
132.5	0	0.168	0
132.6	0	0.168	0
132.7	0	0.168	0
132.8	0	0.168	0
132.9	0	0.168	0
133	0	0.168	0
133.1	0	0.168	0
133.2	0	0.168	0
133.3	0	0.168	0
133.4	0	0.168	0
133.5	0	0.168	0
133.6	0	0.168	0
133.7	0	0.189	0
133.8	0	0.189	0
133.9	0	0.189	0
134	0	0.189	0
134.1	0	0.189	0
134.2	0	0.189	0
134.3	0	0.189	0
134.4	0	0.209	0
134.5	0	0.23	0
134.6	0	0.272	0
134.7	0	0.356	0
134.8	0	0.503	0

134.9	0	0.67	0
135	0	0.88	0
135.1	0	1.11	0.138
135.2	0	1.362	0.405
135.3	0	1.634	0.675
135.4	0	1.885	0.948
135.5	0	2.137	1.215
135.6	0	2.388	1.488
135.7	0	2.639	1.755
135.8	0	2.891	2.025
135.9	0	3.184	2.298
136	0	3.477	2.565
136.1	0	3.833	3.032
136.2	0	4.231	3.675
136.3	0	4.65	4.325
136.4	0	5.09	4.982
136.5	0	5.551	5.625
136.6	0	6.054	6.281
136.7	0	6.598	6.925
136.8	0	7.143	7.575
136.9	0	7.687	8.231
137	0	8.232	8.875
137.1	0	8.798	9.552
137.2	0	9.342	10.235
137.3	0	9.887	10.925
137.4	0	10.432	11.622
137.5	0	10.955	12.305
137.6	0	11.479	13.002
137.7	0	11.982	13.685
137.8	0	12.463	14.375
137.9	0	12.945	15.072
138	0	13.469	15.755
138.1	0	13.992	16.437
138.2	0	14.516	17.09
138.3	0	15.04	17.75
138.4	0	15.584	18.417
138.5	0	16.129	19.07
138.6	0	16.653	19.737
138.7	0	17.197	20.39
138.8	0	17.763	21.05
138.9	0	18.328	21.717
139	0	18.894	22.37
139.1	0	19.439	23.031
139.2	0	20.025	23.675
139.3	0	20.591	24.325

139.4	0	21.177	24.982
139.5	0	21.177	25.625
139.6	0	22.308	26.281
139.7	0	22.874	26.925
139.8	0	23.439	27.575
139.9	0	24.005	28.232
140	0	24.005	28.875
140.1	0	25.094	29.455
140.2	0	25.597	29.95
140.3	0	26.058	30.45
140.4	0	26.058	30.955
140.5	0	26.959	31.45
140.6	0	27.419	31.955
140.7	0	27.859	32.45
140.8	0	27.859	32.95
140.9	0	28.341	33.455
141	0	29.388	33.95
141.1	0	29.912	34.435
141.2	0	30.457	34.89
141.3	0	30.457	35.35
141.4	0	31.022	35.815
141.5	0	32.132	36.27
141.6	0	32.698	36.735
141.7	0	32.698	37.19
141.8	0	33.243	37.65
141.9	0	33.787	38.115
142	0	34.897	38.57
142.1	0	35.442	39.014
142.2	0	35.442	39.43
142.3	0	35.966	39.85
142.4	0	36.51	40.274
142.5	0	37.558	40.69
142.6	0	38.102	41.114
142.7	0	38.102	41.53
142.8	0	38.626	41.95
142.9	0	39.15	42.374
143	0	40.218	42.79
143.1	0	40.218	43.117
143.2	0	40.742	43.345
143.3	0	41.286	43.575
143.4	0	41.81	43.807
143.5	0	42.333	44.035
143.6	0	42.857	44.267
143.7	0	43.381	44.495
143.8	0	43.904	44.725

143.9	0	44.952	44.957
144	0	44.952	45.185
144.1	0	45.476	45.376
144.2	0	45.957	45.525
144.3	0	46.334	45.675
144.4	0	46.628	45.826
144.5	0	46.837	45.975
144.6	0	47.047	46.126
144.7	0	47.235	46.275
144.8	0	47.403	46.425
144.9	0	47.57	46.576
145	0	47.738	46.725
145.1	0	47.905	46.861
145.2	0	48.073	46.98
145.3	0	48.24	47.1
145.4	0	48.429	47.221
145.5	0	48.618	47.34
145.6	0	48.806	47.461
145.7	0	48.995	47.58
145.8	0	49.162	47.7
145.9	0	49.33	47.821
146	0	49.33	47.94
146.1	0	49.602	48.076
146.2	0	49.686	48.225
146.3	0	49.77	48.375
146.4	0	49.832	48.527
146.5	0	49.895	48.675
146.6	0	49.937	48.826
146.7	0	50	48.975
146.8	0	50.063	49.125
146.9	0	50.126	49.277
147	0	50.189	49.425
147.1	0	50.272	49.541
147.2	0	50.356	49.62
147.3	0	50.419	49.7
147.4	0	50.482	49.781
147.5	0	50.545	49.86
147.6	0	50.628	49.941
147.7	0	50.691	50.02
147.8	0	50.754	50.1
147.9	0	50.796	50.181
148	0	50.859	50.26
148.1	0	50.922	50.361
148.2	0	50.964	50.48
148.3	0	51.026	50.6



148.4	0	51.068	50.721
148.5	0	51.11	50.84
148.6	0	51.173	50.961
148.7	0	51.215	51.08
148.8	0	51.278	51.2
148.9	0	51.341	51.321
149	0	51.403	51.44
149.1	0	51.403	51.536
149.2	0	51.529	51.605
149.3	0	51.592	51.675
149.4	0	51.676	51.746
149.5	0	51.676	51.815
149.6	0	51.801	51.886
149.7	0	51.885	51.955
149.8	0	51.948	52.025
149.9	0	52.032	52.096
150	0	52.032	52.165
150.1	0	52.178	52.22
150.2	0	52.262	52.26
150.3	0	52.346	52.3
150.4	0	52.346	52.34
150.5	0	52.43	52.38
150.6	0	52.576	52.42
150.7	0	52.681	52.46
150.8	0	52.681	52.5
150.9	0	52.744	52.54
151	0	52.87	52.58
151.1	0	52.933	52.62
151.2	0	52.995	52.66
151.3	0	52.995	52.7
151.4	0	53.058	52.74
151.5	0	53.184	52.78
151.6	0	53.268	52.82
151.7	0	53.268	52.86
151.8	0	53.331	52.9
151.9	0	53.393	52.94
152	0	53.498	52.98
152.1	0	53.498	53.041
152.2	0	53.561	53.12
152.3	0	53.624	53.2
152.4	0	53.666	53.281
152.5	0	53.729	53.36
152.6	0	53.749	53.441
152.7	0	53.791	53.52
152.8	0	53.833	53.6

152.9	0	53.896	53.681
153	0	53.896	53.76
153.1	0	53.917	53.8
153.2	0	53.959	53.8
153.3	0	54.001	53.8
153.4	0	54.043	53.8
153.5	0	54.085	53.8
153.6	0	54.127	53.8
153.7	0	54.168	53.8
153.8	0	54.189	53.8
153.9	0	54.231	53.8
154	0	54.273	53.8
154.1	0	54.315	53.8
154.2	0	54.357	53.8
154.3	0	54.399	53.8
154.4	0	54.441	53.8
154.5	0	54.483	53.8
154.6	0	54.545	53.8
154.7	0	54.587	53.8
154.8	0	54.65	53.8
154.9	0	54.692	53.8
155	0	54.734	53.8
155.1	0	54.797	53.841
155.2	0	54.839	53.92
155.3	0	54.902	54
155.4	0	54.943	54.081
155.5	0	55.006	54.16
155.6	0	55.048	54.241
155.7	0	55.111	54.32
155.8	0	55.174	54.4
155.9	0	55.216	54.481
156	0	55.279	54.56
156.1	0	55.32	54.687
156.2	0	55.383	54.855
156.3	0	55.446	55.025
156.4	0	55.509	55.197
156.5	0	55.572	55.365
156.6	0	55.635	55.537
156.7	0	55.698	55.705
156.8	0	55.76	55.875
156.9	0	55.823	56.047
157	0	55.886	56.215
157.1	0	55.949	56.331
157.2	0	56.012	56.39
157.3	0	56.075	56.45

157.4	0	56.158	56.511
157.5	0	56.221	56.57
157.6	0	56.305	56.631
157.7	0	56.368	56.69
157.8	0	56.452	56.75
157.9	0	56.535	56.811
158	0	56.619	56.87
158.1	0	56.703	56.961
158.2	0	56.787	57.08
158.3	0	56.871	57.2
158.4	0	56.954	57.321
158.5	0	57.038	57.44
158.6	0	57.122	57.561
158.7	0	57.122	57.68
158.8	0	57.29	57.8
158.9	0	57.373	57.921
159	0	57.373	58.04
159.1	0	57.562	58.115
159.2	0	57.562	58.145
159.3	0	57.729	58.175
159.4	0	57.813	58.205
159.5	0	57.897	58.235
159.6	0	57.897	58.265
159.7	0	58.065	58.295
159.8	0	58.148	58.325
159.9	0	58.232	58.355
160	0	58.232	58.385
160.1	0	58.316	58.461
160.2	0	58.504	58.58
160.3	0	58.609	58.7
160.4	0	58.609	58.821
160.5	0	58.735	58.94
160.6	0	58.84	59.061
160.7	0	59.091	59.18
160.8	0	59.217	59.3
160.9	0	59.217	59.421
161	0	59.342	59.54
161.1	0	59.573	59.615
161.2	0	59.698	59.645
161.3	0	59.698	59.675
161.4	0	59.824	59.705
161.5	0	59.929	59.735
161.6	0	60.034	59.765
161.7	0	60.159	59.795
161.8	0	60.159	59.825

161.9	0	60.222	59.855
162	0	60.264	59.885
162.1	0	60.369	59.915
162.2	0	60.369	59.945
162.3	0	60.432	59.975
162.4	0	60.473	60.005
162.5	0	60.536	60.035
162.6	0	60.578	60.065
162.7	0	60.641	60.095
162.8	0	60.683	60.125
162.9	0	60.746	60.155
163	0	60.788	60.185
163.1	0	60.809	60.215
163.2	0	60.85	60.245
163.3	0	60.892	60.275
163.4	0	60.934	60.305
163.5	0	60.955	60.335
163.6	0	60.976	60.365
163.7	0	60.976	60.395
163.8	0	60.955	60.425
163.9	0	60.934	60.455
164	0	60.892	60.485
164.1	0	60.809	60.459
164.2	0	60.746	60.38
164.3	0	60.662	60.3
164.4	0	60.578	60.219
164.5	0	60.473	60.14
164.6	0	60.39	60.059
164.7	0	60.285	59.98
164.8	0	60.201	59.9
164.9	0	60.117	59.819
165	0	60.013	59.74
165.1	0	59.929	59.629
165.2	0	59.824	59.49
165.3	0	59.74	59.35
165.4	0	59.656	59.209
165.5	0	59.552	59.07
165.6	0	59.447	58.929
165.7	0	59.363	58.79
165.8	0	59.279	58.65
165.9	0	59.175	58.509
166	0	59.091	58.37
166.1	0	58.986	58.29
166.2	0	58.902	58.27
166.3	0	58.819	58.25

166.4	0	58.714	58.23
166.5	0	58.63	58.21
166.6	0	58.546	58.19
166.7	0	58.483	58.17
166.8	0	58.4	58.15
166.9	0	58.337	58.13
167	0	58.295	58.11
167.1	0	58.253	58.085
167.2	0	58.211	58.055
167.3	0	58.19	58.025
167.4	0	58.148	57.995
167.5	0	58.127	57.965
167.6	0	58.106	57.935
167.7	0	58.065	57.905
167.8	0	58.044	57.875
167.9	0	58.044	57.845
168	0	58.002	57.815
168.1	0	57.96	57.774
168.2	0	57.939	57.725
168.3	0	57.939	57.675
168.4	0	57.918	57.625
168.5	0	57.855	57.575
168.6	0	57.834	57.524
168.7	0	57.792	57.475
168.8	0	57.792	57.425
168.9	0	57.75	57.375
169	0	57.708	57.325
169.1	0	57.687	57.31
169.2	0	57.687	57.33
169.3	0	57.667	57.35
169.4	0	57.604	57.37
169.5	0	57.562	57.39
169.6	0	57.541	57.41
169.7	0	57.541	57.43
169.8	0	57.499	57.45
169.9	0	57.394	57.47
170	0	57.331	57.49
170.1	0	57.331	57.454
170.2	0	57.269	57.365
170.3	0	57.227	57.275
170.4	0	57.101	57.184
170.5	0	57.038	57.095
170.6	0	57.038	57.004
170.7	0	56.975	56.915
170.8	0	56.912	56.825

170.9	0	56.808	56.734
171	0	56.808	56.645
171.1	0	56.766	56.62
171.2	0	56.724	56.66
171.3	0	56.682	56.7
171.4	0	56.682	56.74
171.5	0	56.682	56.78
171.6	0	56.703	56.82
171.7	0	56.703	56.86
171.8	0	56.724	56.9
171.9	0	56.745	56.94
172	0	56.745	56.98
172.1	0	56.829	56.98
172.2	0	56.871	56.94
172.3	0	56.912	56.9
172.4	0	56.954	56.86
172.5	0	56.996	56.82
172.6	0	57.017	56.78
172.7	0	57.017	56.74
172.8	0	57.017	56.7
172.9	0	57.017	56.66
173	0	57.017	56.62
173.1	0	57.017	56.595
173.2	0	57.017	56.585
173.3	0	57.017	56.575
173.4	0	57.017	56.565
173.5	0	57.017	56.555
173.6	0	57.017	56.545
173.7	0	57.017	56.535
173.8	0	57.017	56.525
173.9	0	57.017	56.515
174	0	56.996	56.505
174.1	0	56.975	56.485
174.2	0	56.954	56.455
174.3	0	56.912	56.425
174.4	0	56.892	56.393
174.5	0	56.871	56.365
174.6	0	56.85	56.335
174.7	0	56.829	56.305
174.8	0	56.829	56.275
174.9	0	56.829	56.245
175	0	56.808	56.215
175.1	0	56.808	56.21
175.2	0	56.808	56.23
175.3	0	56.808	56.25

175.4	0	56.829	56.27
175.5	0	56.829	56.29
175.6	0	56.85	56.31
175.7	0	56.871	56.33
175.8	0	56.912	56.35
175.9	0	56.933	56.37
176	0	56.975	56.39
176.1	0	57.017	56.41
176.2	0	57.038	56.43
176.3	0	57.08	56.45
176.4	0	57.101	56.47
176.5	0	57.122	56.49
176.6	0	57.122	56.51
176.7	0	57.143	56.53
176.8	0	57.122	56.55
176.9	0	57.122	56.57
177	0	57.122	56.59
177.1	0	57.122	56.59
177.2	0	57.08	56.57
177.3	0	57.059	56.55
177.4	0	57.038	56.53
177.5	0	57.017	56.51
177.6	0	57.017	56.49
177.7	0	56.954	56.47
177.8	0	56.933	56.45
177.9	0	56.912	56.43
178	0	56.892	56.41
178.1	0	56.892	56.385
178.2	0	56.85	56.355
178.3	0	56.829	56.325
178.4	0	56.808	56.295
178.5	0	56.808	56.265
178.6	0	56.766	56.235
178.7	0	56.724	56.205
178.8	0	56.703	56.175
178.9	0	56.703	56.145
179	0	56.661	56.115
179.1	0	56.577	56.095
179.2	0	56.535	56.085
179.3	0	56.494	56.075
179.4	0	56.494	56.065
179.5	0	56.452	56.055
179.6	0	56.368	56.045
179.7	0	56.326	56.035
179.8	0	56.326	56.025

179.9	0	56.305	56.015
180	0	56.284	56.005
180.1	0	56.221	55.995
180.2	0	56.221	55.985
180.3	0	56.2	55.975
180.4	0	56.158	55.965
180.5	0	56.137	55.955
180.6	0	56.075	55.945
180.7	0	56.075	55.935
180.8	0	56.033	55.925
180.9	0	56.012	55.915
181	0	55.97	55.905
181.1	0	55.928	55.844
181.2	0	55.886	55.735
181.3	0	55.823	55.625
181.4	0	55.739	55.514
181.5	0	55.593	55.405
181.6	0	55.593	55.294
181.7	0	55.509	55.185
181.8	0	55.425	55.075
181.9	0	55.32	54.964
182	0	55.237	54.855
182.1	0	55.153	54.769
182.2	0	55.069	54.71
182.3	0	54.985	54.65
182.4	0	54.943	54.589
182.5	0	54.881	54.53
182.6	0	54.86	54.469
182.7	0	54.818	54.41
182.8	0	54.797	54.35
182.9	0	54.797	54.289
183	0	54.797	54.23
183.1	0	54.839	54.22
183.2	0	54.86	54.26
183.3	0	54.923	54.3
183.4	0	54.985	54.34
183.5	0	55.048	54.38
183.6	0	55.111	54.42
183.7	0	55.174	54.46
183.8	0	55.216	54.5
183.9	0	55.237	54.54
184	0	55.174	54.58
184.1	0	54.923	54.478
184.2	0	54.504	54.24
184.3	0	54.001	54



184.4	0	53.498	53.758
184.5	0	53.163	53.52
184.6	0	52.995	53.278
184.7	0	52.891	53.04
184.8	0	52.807	52.8
184.9	0	52.786	52.558
185	0	52.786	52.32
185.1	0	52.828	52.327
185.2	0	52.87	52.575
185.3	0	52.933	52.825
185.4	0	53.016	53.077
185.5	0	53.1	53.325
185.6	0	53.205	53.577
185.7	0	53.31	53.825
185.8	0	53.456	54.075
185.9	0	53.645	54.327
186	0	53.896	54.575
186.1	0	54.21	54.751
186.2	0	54.525	54.85
186.3	0	54.86	54.95
186.4	0	54.86	55.051
186.5	0	55.551	55.15
186.6	0	55.886	55.251
186.7	0	56.179	55.35
186.8	0	56.431	55.45
186.9	0	56.661	55.551
187	0	56.829	55.65
187.1	0	57.017	55.766
187.2	0	57.185	55.895
187.3	0	57.185	56.025
187.4	0	57.478	56.156
187.5	0	57.604	56.285
187.6	0	57.687	56.416
187.7	0	57.687	56.545
187.8	0	57.792	56.675
187.9	0	57.939	56.806
188	0	58.002	56.935
188.1	0	58.065	57.051
188.2	0	58.065	57.15
188.3	0	58.19	57.25
188.4	0	58.274	57.351
188.5	0	58.337	57.45
188.6	0	58.337	57.551
188.7	0	58.421	57.65
188.8	0	58.525	57.75

188.9	0	58.567	57.851
189	0	58.567	57.95
189.1	0	58.609	58.005
189.2	0	58.63	58.015
189.3	0	58.672	58.025
189.4	0	58.714	58.035
189.5	0	58.714	58.045
189.6	0	58.735	58.055
189.7	0	58.777	58.065
189.8	0	58.881	58.075
189.9	0	58.881	58.085
190	0	58.944	58.095
190.1	0	59.007	58.166
190.2	0	59.07	58.295
190.3	0	59.196	58.425
190.4	0	59.196	58.556
190.5	0	59.258	58.685
190.6	0	59.321	58.816
190.7	0	59.468	58.945
190.8	0	59.468	59.075
190.9	0	59.552	59.206
191	0	59.615	59.335
191.1	0	59.698	59.426
191.2	0	59.845	59.475
191.3	0	59.845	59.525
191.4	0	59.908	59.576
191.5	0	59.971	59.625
191.6	0	60.034	59.676
191.7	0	60.096	59.725
191.8	0	60.159	59.775
191.9	0	60.201	59.826
192	0	60.264	59.875
192.1	0	60.306	59.956
192.2	0	60.369	60.065
192.3	0	60.411	60.175
192.4	0	60.452	60.286
192.5	0	60.494	60.395
192.6	0	60.557	60.506
192.7	0	60.599	60.615
192.8	0	60.641	60.725
192.9	0	60.683	60.836
193	0	60.725	60.945
193.1	0	60.788	61.02
193.2	0	60.83	61.06
193.3	0	60.871	61.1

193.4	0	60.934	61.14
193.5	0	60.976	61.18
193.6	0	61.018	61.22
193.7	0	61.081	61.26
193.8	0	61.123	61.3
193.9	0	61.165	61.34
194	0	61.207	61.38
194.1	0	61.248	61.426
194.2	0	61.311	61.475
194.3	0	61.353	61.525
194.4	0	61.395	61.576
194.5	0	61.437	61.625
194.6	0	61.479	61.676
194.7	0	61.521	61.725
194.8	0	61.563	61.775
194.9	0	61.584	61.826
195	0	61.646	61.875
195.1	0	61.688	61.931
195.2	0	61.73	61.99
195.3	0	61.772	62.05
195.4	0	61.793	62.111
195.5	0	61.835	62.17
195.6	0	61.877	62.231
195.7	0	61.919	62.29
195.8	0	61.961	62.35
195.9	0	62.003	62.411
196	0	62.065	62.47
196.1	0	62.065	62.5
196.2	0	62.17	62.5
196.3	0	62.212	62.5
196.4	0	62.254	62.5
196.5	0	62.317	62.5
196.6	0	62.359	62.5
196.7	0	62.401	62.5
196.8	0	62.442	62.5
196.9	0	62.484	62.5
197	0	62.484	62.5
197.1	0	62.547	62.51
197.2	0	62.568	62.53
197.3	0	62.61	62.55
197.4	0	62.61	62.57
197.5	0	62.631	62.59
197.6	0	62.673	62.61
197.7	0	62.673	62.63
197.8	0	62.694	62.65

197.9	0	62.694	62.67
198	0	62.694	62.69
198.1	0	62.715	62.674
198.2	0	62.736	62.625
198.3	0	62.736	62.575
198.4	0	62.778	62.525
198.5	0	62.861	62.475
198.6	0	62.903	62.424
198.7	0	62.903	62.375
198.8	0	62.924	62.325
198.9	0	62.966	62.275
199	0	62.987	62.225
199.1	0	62.987	62.215
199.2	0	62.987	62.245
199.3	0	62.987	62.275
199.4	0	62.966	62.305
199.5	0	62.966	62.335
199.6	0	62.966	62.365
199.7	0	62.966	62.395
199.8	0	62.966	62.425
199.9	0	62.987	62.455
200	0	62.987	62.485
200.1	0	63.008	62.531
200.2	0	63.029	62.59
200.3	0	63.05	62.65
200.4	0	63.071	62.711
200.5	0	63.092	62.77
200.6	0	63.092	62.831
200.7	0	63.092	62.89
200.8	0	63.092	62.95
200.9	0	63.092	63.011
201	0	63.092	63.07
201.1	0	63.092	63.08
201.2	0	63.071	63.04
201.3	0	63.05	63
201.4	0	63.029	62.96
201.5	0	63.008	62.92
201.6	0	62.987	62.88
201.7	0	62.945	62.84
201.8	0	62.924	62.8
201.9	0	62.924	62.76
202	0	62.903	62.72
202.1	0	62.903	62.705
202.2	0	62.903	62.715
202.3	0	62.924	62.725

202.4	0	62.924	62.735
202.5	0	62.945	62.745
202.6	0	62.966	62.755
202.7	0	62.987	62.765
202.8	0	63.008	62.775
202.9	0	63.05	62.785
203	0	63.071	62.795
203.1	0	63.113	62.81
203.2	0	63.155	62.83
203.3	0	63.196	62.85
203.4	0	63.259	62.87
203.5	0	63.301	62.89
203.6	0	63.343	62.91
203.7	0	63.385	62.93
203.8	0	63.448	62.95
203.9	0	63.49	62.97
204	0	63.532	62.99
204.1	0	63.594	63.056
204.2	0	63.636	63.165
204.3	0	63.678	63.275
204.4	0	63.699	63.386
204.5	0	63.741	63.495
204.6	0	63.762	63.606
204.7	0	63.762	63.715
204.8	0	63.783	63.825
204.9	0	63.804	63.936
205	0	63.825	64.045
205.1	0	63.846	64.09
205.2	0	63.888	64.07
205.3	0	63.909	64.05
205.4	0	63.93	64.03
205.5	0	63.951	64.01
205.6	0	63.972	63.99
205.7	0	63.992	63.97
205.8	0	64.034	63.95
205.9	0	64.076	63.93
206	0	64.097	63.91
206.1	0	64.097	63.91
206.2	0	64.16	63.93
206.3	0	64.202	63.95
206.4	0	64.223	63.97
206.5	0	64.223	63.99
206.6	0	64.265	64.01
206.7	0	64.328	64.03
206.8	0	64.349	64.05

206.9	0	64.39	64.07
207	0	64.39	64.09
207.1	0	64.432	64.11
207.2	0	64.474	64.13
207.3	0	64.495	64.15
207.4	0	64.495	64.17
207.5	0	64.537	64.19
207.6	0	64.6	64.21
207.7	0	64.621	64.23
207.8	0	64.621	64.25
207.9	0	64.663	64.27
208	0	64.684	64.29
208.1	0	64.747	64.31
208.2	0	64.747	64.33
208.3	0	64.768	64.35
208.4	0	64.788	64.37
208.5	0	64.83	64.39
208.6	0	64.851	64.41
208.7	0	64.851	64.43
208.8	0	64.872	64.45
208.9	0	64.893	64.47
209	0	64.935	64.49
209.1	0	64.935	64.52
209.2	0	64.956	64.56
209.3	0	64.977	64.6
209.4	0	64.998	64.64
209.5	0	65.019	64.68
209.6	0	65.04	64.72
209.7	0	65.082	64.76
209.8	0	65.124	64.8
209.9	0	65.186	64.84
210	0	65.186	64.88
210.1	0	65.207	64.92
210.2	0	65.249	64.96
210.3	0	65.27	65
210.4	0	65.312	65.04
210.5	0	65.354	65.08
210.6	0	65.375	65.12
210.7	0	65.417	65.16
210.8	0	65.459	65.2
210.9	0	65.48	65.24
211	0	65.48	65.28
211.1	0	65.563	65.336
211.2	0	65.584	65.405
211.3	0	65.626	65.475

211.4	0	65.647	65.546
211.5	0	65.689	65.615
211.6	0	65.71	65.686
211.7	0	65.752	65.755
211.8	0	65.773	65.825
211.9	0	65.815	65.896
212	0	65.857	65.965
212.1	0	65.899	66
212.2	0	65.941	66
212.3	0	65.982	66
212.4	0	66.045	66
212.5	0	66.087	66
212.6	0	66.15	66
212.7	0	66.192	66
212.8	0	66.234	66
212.9	0	66.276	66
213	0	66.297	66
213.1	0	66.318	66.02
213.2	0	66.297	66.06
213.3	0	66.255	66.1
213.4	0	66.192	66.14
213.5	0	66.129	66.18
213.6	0	66.066	66.22
213.7	0	65.982	66.26
213.8	0	65.878	66.3
213.9	0	65.794	66.34
214	0	65.689	66.38
214.1	0	65.605	66.283
214.2	0	65.48	66.055
214.3	0	65.375	65.825
214.4	0	65.165	65.593
214.5	0	64.83	65.365
214.6	0	64.495	65.133
214.7	0	64.286	64.905
214.8	0	64.16	64.675
214.9	0	64.034	64.443
215	0	63.972	64.215
215.1	0	63.972	64.075
215.2	0	63.909	64.025
215.3	0	63.951	63.975
215.4	0	63.992	63.924
215.5	0	63.992	63.875
215.6	0	64.097	63.824
215.7	0	64.16	63.775
215.8	0	64.181	63.725

215.9	0	64.202	63.674
216	0	64.202	63.625
216.1	0	64.265	63.615
216.2	0	64.307	63.645
216.3	0	64.328	63.675
216.4	0	64.328	63.705
216.5	0	64.37	63.735
216.6	0	64.453	63.765
216.7	0	64.453	63.795
216.8	0	64.453	63.825
216.9	0	64.453	63.855
217	0	64.39	63.885
217.1	0	64.349	63.91
217.2	0	64.286	63.93
217.3	0	64.286	63.95
217.4	0	64.244	63.97
217.5	0	64.202	63.99
217.6	0	64.202	64.01
217.7	0	64.202	64.03
217.8	0	64.202	64.05
217.9	0	64.223	64.07
218	0	64.244	64.09
218.1	0	64.244	64.08
218.2	0	64.265	64.04
218.3	0	64.265	64
218.4	0	64.307	63.96
218.5	0	64.307	63.92
218.6	0	64.328	63.88
218.7	0	64.37	63.84
218.8	0	64.39	63.8
218.9	0	64.453	63.76
219	0	64.453	63.72
219.1	0	64.474	63.731
219.2	0	64.495	63.79
219.3	0	64.495	63.85
219.4	0	64.495	63.911
219.5	0	64.516	63.97
219.6	0	64.516	64.031
219.7	0	64.516	64.09
219.8	0	64.516	64.15
219.9	0	64.516	64.211
220	0	64.516	64.27
220.1	0	64.516	64.295
220.2	0	64.495	64.285
220.3	0	64.474	64.275



220.4	0	64.474	64.265
220.5	0	64.453	64.255
220.6	0	64.453	64.245
220.7	0	64.432	64.235
220.8	0	64.411	64.225
220.9	0	64.411	64.215
221	0	64.39	64.205
221.1	0	64.39	64.185
221.2	0	64.37	64.155
221.3	0	64.37	64.125
221.4	0	64.349	64.095
221.5	0	64.349	64.065
221.6	0	64.349	64.035
221.7	0	64.328	64.005
221.8	0	64.328	63.975
221.9	0	64.328	63.945
222	0	64.328	63.915
222.1	0	64.328	63.915
222.2	0	64.328	63.945
222.3	0	64.307	63.975
222.4	0	64.307	64.005
222.5	0	64.265	64.035
222.6	0	64.244	64.065
222.7	0	64.202	64.095
222.8	0	64.181	64.125
222.9	0	64.139	64.155
223	0	64.118	64.185
223.1	0	64.076	64.159
223.2	0	64.034	64.08
223.3	0	63.992	64
223.4	0	63.972	63.919
223.5	0	63.951	63.84
223.6	0	63.951	63.759
223.7	0	63.951	63.68
223.8	0	63.951	63.6
223.9	0	63.951	63.519
224	0	63.972	63.44
224.1	0	63.992	63.431
224.2	0	63.992	63.49
224.3	0	64.013	63.55
224.4	0	64.013	63.611
224.5	0	64.034	63.67
224.6	0	64.055	63.731
224.7	0	64.055	63.79
224.8	0	64.097	63.85

224.9	0	64.118	63.911
225	0	64.139	63.97
225.1	0	64.16	63.995
225.2	0	64.16	63.985
225.3	0	64.202	63.975
225.4	0	64.223	63.965
225.5	0	64.244	63.955
225.6	0	64.244	63.945
225.7	0	64.265	63.935
225.8	0	64.286	63.925
225.9	0	64.286	63.915
226	0	64.286	63.905
226.1	0	64.265	63.905
226.2	0	64.223	63.915
226.3	0	64.181	63.925
226.4	0	64.139	63.935
226.5	0	64.139	63.945
226.6	0	64.118	63.955
226.7	0	64.034	63.965
226.8	0	63.992	63.975
226.9	0	63.992	63.985
227	0	63.951	63.995
227.1	0	63.909	63.99
227.2	0	63.825	63.97
227.3	0	63.825	63.95
227.4	0	63.783	63.93
227.5	0	63.741	63.91
227.6	0	63.678	63.89
227.7	0	63.678	63.87
227.8	0	63.678	63.85
227.9	0	63.699	63.83
228	0	63.72	63.81
228.1	0	63.762	63.81
228.2	0	63.762	63.83
228.3	0	63.783	63.85
228.4	0	63.804	63.87
228.5	0	63.825	63.89
228.6	0	63.825	63.91
228.7	0	63.825	63.93
228.8	0	63.825	63.95
228.9	0	63.804	63.97
229	0	63.783	63.99
229.1	0	63.741	63.964
229.2	0	63.699	63.895
229.3	0	63.657	63.825

229.4	0	63.615	63.754
229.5	0	63.553	63.685
229.6	0	63.532	63.614
229.7	0	63.511	63.545
229.8	0	63.49	63.475
229.9	0	63.49	63.404
230	0	63.49	63.335
230.1	0	63.469	63.305
230.2	0	63.469	63.315
230.3	0	63.469	63.325
230.4	0	63.469	63.335
230.5	0	63.49	63.345
230.6	0	63.511	63.355
230.7	0	63.553	63.365
230.8	0	63.574	63.375
230.9	0	63.615	63.385
231	0	63.657	63.395
231.1	0	63.678	63.426
231.2	0	63.72	63.475
231.3	0	63.741	63.525
231.4	0	63.783	63.576
231.5	0	63.825	63.625
231.6	0	63.846	63.676
231.7	0	63.888	63.725
231.8	0	63.93	63.775
231.9	0	63.972	63.826
232	0	63.992	63.875
232.1	0	64.034	63.905
232.2	0	64.034	63.915
232.3	0	64.055	63.925
232.4	0	64.076	63.935
232.5	0	64.076	63.945
232.6	0	64.118	63.955
232.7	0	64.139	63.965
232.8	0	64.181	63.975
232.9	0	64.202	63.985
233	0	64.244	63.995
233.1	0	64.265	64.015
233.2	0	64.307	64.045
233.3	0	64.328	64.075
233.4	0	64.37	64.105
233.5	0	64.37	64.135
233.6	0	64.453	64.165
233.7	0	64.495	64.195
233.8	0	64.537	64.225

233.9	0	64.6	64.255
234	0	64.6	64.285
234.1	0	64.684	64.326
234.2	0	64.726	64.375
234.3	0	64.768	64.425
234.4	0	64.768	64.476
234.5	0	64.872	64.525
234.6	0	64.914	64.576
234.7	0	64.956	64.625
234.8	0	64.956	64.675
234.9	0	64.998	64.726
235	0	65.082	64.775
235.1	0	65.103	64.815
235.2	0	65.145	64.845
235.3	0	65.145	64.875
235.4	0	65.207	64.905
235.5	0	65.207	64.935
235.6	0	65.186	64.965
235.7	0	65.186	64.995
235.8	0	65.165	65.025
235.9	0	65.061	65.055
236	0	64.998	65.085
236.1	0	64.914	65.044
236.2	0	64.914	64.935
236.3	0	64.83	64.825
236.4	0	64.642	64.714
236.5	0	64.537	64.605
236.6	0	64.537	64.494
236.7	0	64.453	64.385
236.8	0	64.39	64.275
236.9	0	64.349	64.164
237	0	64.349	64.055
237.1	0	64.307	64.01
237.2	0	64.307	64.03
237.3	0	64.328	64.05
237.4	0	64.39	64.07
237.5	0	64.39	64.09
237.6	0	64.432	64.11
237.7	0	64.453	64.13
237.8	0	64.495	64.15
237.9	0	64.495	64.17
238	0	64.495	64.19
238.1	0	64.453	64.144
238.2	0	64.39	64.035
238.3	0	64.349	63.925

238.4	0	64.265	63.814
238.5	0	64.202	63.705
238.6	0	64.139	63.594
238.7	0	64.055	63.485
238.8	0	64.013	63.375
238.9	0	63.951	63.264
239	0	63.888	63.155
239.1	0	63.825	63.131
239.2	0	63.762	63.19
239.3	0	63.72	63.25
239.4	0	63.678	63.311
239.5	0	63.657	63.37
239.6	0	63.657	63.431
239.7	0	63.636	63.49
239.8	0	63.636	63.55
239.9	0	63.636	63.611
240	0	63.636	63.67
240.1	0	63.636	63.669
240.2	0	63.636	63.61
240.3	0	63.657	63.55
240.4	0	63.657	63.489
240.5	0	63.699	63.43
240.6	0	63.72	63.369
240.7	0	63.762	63.31
240.8	0	63.804	63.25
240.9	0	63.825	63.189
241	0	63.846	63.13
241.1	0	63.867	63.131
241.2	0	63.846	63.19
241.3	0	63.846	63.25
241.4	0	63.825	63.311
241.5	0	63.825	63.37
241.6	0	63.825	63.431
241.7	0	63.825	63.49
241.8	0	63.804	63.55
241.9	0	63.783	63.611
242	0	63.762	63.67
242.1	0	63.741	63.69
242.2	0	63.699	63.67
242.3	0	63.699	63.65
242.4	0	63.678	63.63
242.5	0	63.678	63.61
242.6	0	63.678	63.59
242.7	0	63.678	63.57
242.8	0	63.657	63.55

242.9	0	63.657	63.53
243	0	63.636	63.51
243.1	0	63.636	63.474
243.2	0	63.615	63.425
243.3	0	63.615	63.375
243.4	0	63.594	63.325
243.5	0	63.574	63.275
243.6	0	63.574	63.224
243.7	0	63.532	63.175
243.8	0	63.532	63.125
243.9	0	63.532	63.075
244	0	63.532	63.025
244.1	0	63.532	63.005
244.2	0	63.532	63.015
244.3	0	63.532	63.025
244.4	0	63.532	63.035
244.5	0	63.532	63.045
244.6	0	63.532	63.055
244.7	0	63.469	63.065
244.8	0	63.427	63.075
244.9	0	63.427	63.085
245	0	63.406	63.095
245.1	0	63.385	63.095
245.2	0	63.385	63.085
245.3	0	63.385	63.075
245.4	0	63.385	63.065
245.5	0	63.385	63.055
245.6	0	63.406	63.045
245.7	0	63.427	63.035
245.8	0	63.427	63.025
245.9	0	63.469	63.015
246	0	63.49	63.005
246.1	0	63.553	63.015
246.2	0	63.574	63.045
246.3	0	63.574	63.075
246.4	0	63.574	63.105
246.5	0	63.594	63.135
246.6	0	63.574	63.165
246.7	0	63.574	63.195
246.8	0	63.574	63.225
246.9	0	63.574	63.255
247	0	63.574	63.285
247.1	0	63.574	63.305
247.2	0	63.553	63.315
247.3	0	63.553	63.325

247.4	0	63.532	63.335
247.5	0	63.469	63.345
247.6	0	63.469	63.355
247.7	0	63.448	63.365
247.8	0	63.448	63.375
247.9	0	63.427	63.385
248	0	63.427	63.395
248.1	0	63.427	63.395
248.2	0	63.406	63.385
248.3	0	63.406	63.375
248.4	0	63.406	63.365
248.5	0	63.427	63.355
248.6	0	63.427	63.345
248.7	0	63.427	63.335
248.8	0	63.406	63.325
248.9	0	63.364	63.315
249	0	63.343	63.305
249.1	0	63.301	63.259
249.2	0	63.28	63.18
249.3	0	63.259	63.1
249.4	0	63.259	63.019
249.5	0	63.238	62.94
249.6	0	63.217	62.859
249.7	0	63.176	62.78
249.8	0	63.155	62.7
249.9	0	63.155	62.619
250	0	63.071	62.54
250.1	0	63.029	62.5
250.2	0	63.008	62.5
250.3	0	62.966	62.5
250.4	0	62.966	62.5
250.5	0	62.945	62.5
250.6	0	62.945	62.5
250.7	0	62.945	62.5
250.8	0	62.945	62.5
250.9	0	62.966	62.5
251	0	62.966	62.5
251.1	0	62.987	62.52
251.2	0	62.987	62.56
251.3	0	62.987	62.6
251.4	0	62.987	62.64
251.5	0	62.987	62.68
251.6	0	62.987	62.72
251.7	0	62.987	62.76
251.8	0	62.987	62.8

251.9	0	62.987	62.84
252	0	62.987	62.88
252.1	0	62.987	62.895
252.2	0	62.987	62.885
252.3	0	62.966	62.875
252.4	0	62.945	62.865
252.5	0	62.924	62.855
252.6	0	62.903	62.845
252.7	0	62.882	62.835
252.8	0	62.861	62.825
252.9	0	62.819	62.815
253	0	62.757	62.805
253.1	0	62.715	62.769
253.2	0	62.652	62.71
253.3	0	62.652	62.65
253.4	0	62.526	62.589
253.5	0	62.484	62.53
253.6	0	62.463	62.469
253.7	0	62.463	62.41
253.8	0	62.421	62.35
253.9	0	62.359	62.289
254	0	62.338	62.23
254.1	0	62.317	62.21
254.2	0	62.317	62.23
254.3	0	62.317	62.25
254.4	0	62.338	62.27
254.5	0	62.359	62.29
254.6	0	62.359	62.31
254.7	0	62.401	62.33
254.8	0	62.463	62.35
254.9	0	62.484	62.37
255	0	62.484	62.39
255.1	0	62.526	62.395
255.2	0	62.547	62.385
255.3	0	62.61	62.375
255.4	0	62.61	62.365
255.5	0	62.61	62.355
255.6	0	62.61	62.345
255.7	0	62.589	62.335
255.8	0	62.568	62.325
255.9	0	62.547	62.315
256	0	62.547	62.305
256.1	0	62.526	62.3
256.2	0	62.526	62.3
256.3	0	62.484	62.3



256.4	0	62.484	62.3
256.5	0	62.463	62.3
256.6	0	62.463	62.3
256.7	0	62.442	62.3
256.8	0	62.442	62.3
256.9	0	62.442	62.3
257	0	62.421	62.3
257.1	0	62.442	62.305
257.2	0	62.463	62.315
257.3	0	62.463	62.325
257.4	0	62.484	62.335
257.5	0	62.505	62.345
257.6	0	62.526	62.355
257.7	0	62.547	62.365
257.8	0	62.568	62.375
257.9	0	62.589	62.385
258	0	62.61	62.395
258.1	0	62.631	62.385
258.2	0	62.652	62.355
258.3	0	62.673	62.325
258.4	0	62.694	62.295
258.5	0	62.736	62.265
258.6	0	62.757	62.235
258.7	0	62.778	62.205
258.8	0	62.799	62.175
258.9	0	62.819	62.145
259	0	62.84	62.115
259.1	0	62.882	62.12
259.2	0	62.903	62.16
259.3	0	62.945	62.2
259.4	0	62.966	62.24
259.5	0	63.008	62.28
259.6	0	63.029	62.32
259.7	0	63.071	62.36
259.8	0	63.092	62.4
259.9	0	63.113	62.44
260	0	63.134	62.48
260.1	0	63.155	62.515
260.2	0	63.176	62.545
260.3	0	63.176	62.575
260.4	0	63.196	62.605
260.5	0	63.196	62.635
260.6	0	63.217	62.665
260.7	0	63.217	62.695
260.8	0	63.217	62.725

260.9	0	63.196	62.755
261	0	63.176	62.785
261.1	0	63.134	62.774
261.2	0	63.092	62.725
261.3	0	63.029	62.675
261.4	0	62.966	62.625
261.5	0	62.903	62.575
261.6	0	62.84	62.524
261.7	0	62.778	62.475
261.8	0	62.715	62.425
261.9	0	62.652	62.375
262	0	62.589	62.325
262.1	0	62.589	62.3
262.2	0	62.526	62.3
262.3	0	62.505	62.3
262.4	0	62.484	62.3
262.5	0	62.484	62.3
262.6	0	62.484	62.3
262.7	0	62.484	62.3
262.8	0	62.484	62.3
262.9	0	62.484	62.3
263	0	62.484	62.3
263.1	0	62.505	62.305
263.2	0	62.505	62.315
263.3	0	62.526	62.325
263.4	0	62.526	62.335
263.5	0	62.547	62.345
263.6	0	62.568	62.355
263.7	0	62.589	62.365
263.8	0	62.589	62.375
263.9	0	62.61	62.385
264	0	62.61	62.395
264.1	0	62.568	62.375
264.2	0	62.547	62.325
264.3	0	62.547	62.275
264.4	0	62.526	62.225
264.5	0	62.484	62.175
264.6	0	62.463	62.125
264.7	0	62.463	62.075
264.8	0	62.442	62.025
264.9	0	62.442	61.975
265	0	62.484	61.925
265.1	0	62.526	61.946
265.2	0	62.526	62.035
265.3	0	62.547	62.125

265.4	0	62.589	62.216
265.5	0	62.652	62.305
265.6	0	62.652	62.396
265.7	0	62.673	62.485
265.8	0	62.694	62.575
265.9	0	62.715	62.666
266	0	62.757	62.755
266.1	0	62.757	62.8
266.2	0	62.778	62.8
266.3	0	62.799	62.8
266.4	0	62.799	62.8
266.5	0	62.799	62.8
266.6	0	62.799	62.8
266.7	0	62.778	62.8
266.8	0	62.757	62.8
266.9	0	62.736	62.8
267	0	62.715	62.8
267.1	0	62.715	62.774
267.2	0	62.694	62.725
267.3	0	62.673	62.675
267.4	0	62.652	62.625
267.5	0	62.631	62.575
267.6	0	62.61	62.524
267.7	0	62.589	62.475
267.8	0	62.568	62.425
267.9	0	62.547	62.375
268	0	62.547	62.325
268.1	0	62.547	62.326
268.2	0	62.547	62.375
268.3	0	62.568	62.425
268.4	0	62.568	62.475
268.5	0	62.589	62.525
268.6	0	62.589	62.576
268.7	0	62.61	62.625
268.8	0	62.631	62.675
268.9	0	62.631	62.725
269	0	62.631	62.775
269.1	0	62.631	62.78
269.2	0	62.61	62.74
269.3	0	62.589	62.7
269.4	0	62.568	62.66
269.5	0	62.547	62.62
269.6	0	62.505	62.58
269.7	0	62.484	62.54
269.8	0	62.463	62.5

269.9	0	62.442	62.46
270	0	62.401	62.42
270.1	0	62.38	62.385
270.2	0	62.359	62.355
270.3	0	62.338	62.325
270.4	0	62.317	62.295
270.5	0	62.275	62.265
270.6	0	62.254	62.235
270.7	0	62.233	62.205
270.8	0	62.212	62.175
270.9	0	62.17	62.145
271	0	62.149	62.115
271.1	0	62.128	62.09
271.2	0	62.086	62.07
271.3	0	62.044	62.05
271.4	0	62.023	62.03
271.5	0	61.982	62.01
271.6	0	61.982	61.99
271.7	0	61.898	61.97
271.8	0	61.856	61.95
271.9	0	61.814	61.93
272	0	61.772	61.91
272.1	0	61.772	61.895
272.2	0	61.709	61.885
272.3	0	61.667	61.875
272.4	0	61.625	61.865
272.5	0	61.625	61.855
272.6	0	61.563	61.845
272.7	0	61.542	61.835
272.8	0	61.5	61.825
272.9	0	61.5	61.815
273	0	61.458	61.805
273.1	0	61.395	61.815
273.2	0	61.374	61.845
273.3	0	61.374	61.875
273.4	0	61.332	61.905
273.5	0	61.311	61.935
273.6	0	61.29	61.965
273.7	0	61.269	61.995
273.8	0	61.269	62.025
273.9	0	61.29	62.055
274	0	61.353	62.085
274.1	0	61.374	62.1
274.2	0	61.374	62.1
274.3	0	61.416	62.1

274.4	0	61.458	62.1
274.5	0	61.521	62.1
274.6	0	61.521	62.1
274.7	0	61.563	62.1
274.8	0	61.605	62.1
274.9	0	61.667	62.1
275	0	61.688	62.1
275.1	0	61.688	62.1
275.2	0	61.709	62.1
275.3	0	61.73	62.1
275.4	0	61.772	62.1
275.5	0	61.772	62.1
275.6	0	61.793	62.1
275.7	0	61.793	62.1
275.8	0	61.814	62.1
275.9	0	61.814	62.1
276	0	61.877	62.1
276.1	0	61.898	62.095
276.2	0	61.919	62.085
276.3	0	61.94	62.075
276.4	0	61.961	62.065
276.5	0	61.982	62.055
276.6	0	61.982	62.045
276.7	0	62.003	62.035
276.8	0	62.003	62.025
276.9	0	62.023	62.015
277	0	62.044	62.005
277.1	0	62.044	62.02
277.2	0	62.065	62.06
277.3	0	62.065	62.1
277.4	0	62.086	62.14
277.5	0	62.086	62.18
277.6	0	62.107	62.22
277.7	0	62.107	62.26
277.8	0	62.107	62.3
277.9	0	62.128	62.34
278	0	62.128	62.38
278.1	0	62.128	62.39
278.2	0	62.128	62.37
278.3	0	62.128	62.35
278.4	0	62.149	62.33
278.5	0	62.149	62.31
278.6	0	62.149	62.29
278.7	0	62.149	62.27
278.8	0	62.149	62.25

278.9	0	62.149	62.23
279	0	62.17	62.21
279.1	0	62.17	62.2
279.2	0	62.17	62.2
279.3	0	62.17	62.2
279.4	0	62.191	62.2
279.5	0	62.233	62.2
279.6	0	62.275	62.2
279.7	0	62.296	62.2
279.8	0	62.317	62.2
279.9	0	62.359	62.2
280	0	62.38	62.2
280.1	0	62.401	62.21
280.2	0	62.401	62.23
280.3	0	62.421	62.25
280.4	0	62.442	62.27
280.5	0	62.463	62.29
280.6	0	62.484	62.31
280.7	0	62.484	62.33
280.8	0	62.505	62.35
280.9	0	62.526	62.37
281	0	62.547	62.39
281.1	0	62.568	62.415
281.2	0	62.568	62.445
281.3	0	62.589	62.475
281.4	0	62.61	62.505
281.5	0	62.631	62.535
281.6	0	62.631	62.565
281.7	0	62.652	62.595
281.8	0	62.715	62.625
281.9	0	62.736	62.655
282	0	62.778	62.685
282.1	0	62.778	62.695
282.2	0	62.819	62.685
282.3	0	62.84	62.675
282.4	0	62.882	62.665
282.5	0	62.882	62.655
282.6	0	62.903	62.645
282.7	0	62.987	62.635
282.8	0	63.008	62.625
282.9	0	63.05	62.615
283	0	63.05	62.605
283.1	0	63.071	62.656
283.2	0	63.134	62.765
283.3	0	63.176	62.875

283.4	0	63.176	62.986
283.5	0	63.196	63.095
283.6	0	63.259	63.206
283.7	0	63.28	63.315
283.8	0	63.28	63.425
283.9	0	63.322	63.536
284	0	63.364	63.645
284.1	0	63.427	63.731
284.2	0	63.469	63.794
284.3	0	63.469	63.85
284.4	0	63.511	63.911
284.5	0	63.553	63.97
284.6	0	63.636	64.031
284.7	0	63.636	64.09
284.8	0	63.678	64.15
284.9	0	63.741	64.211
285	0	63.783	64.27
285.1	0	63.846	64.326
285.2	0	63.909	64.375
285.3	0	63.951	64.425
285.4	0	64.013	64.476
285.5	0	64.076	64.525
285.6	0	64.139	64.576
285.7	0	64.181	64.625
285.8	0	64.244	64.675
285.9	0	64.307	64.726
286	0	64.349	64.775
286.1	0	64.411	64.815
286.2	0	64.474	64.845
286.3	0	64.516	64.875
286.4	0	64.579	64.905
286.5	0	64.642	64.935
286.6	0	64.684	64.965
286.7	0	64.747	64.995
286.8	0	64.788	65.025
286.9	0	64.851	65.055
287	0	64.914	65.085
287.1	0	64.977	65.141
287.2	0	65.04	65.22
287.3	0	65.103	65.3
287.4	0	65.165	65.381
287.5	0	65.228	65.46
287.6	0	65.312	65.541
287.7	0	65.375	65.62
287.8	0	65.438	65.7

287.9	0	65.501	65.781
288	0	65.563	65.86
288.1	0	65.626	65.91
288.2	0	65.668	65.93
288.3	0	65.731	65.95
288.4	0	65.773	65.97
288.5	0	65.836	65.99
288.6	0	65.899	66.01
288.7	0	65.941	66.03
288.8	0	65.982	66.05
288.9	0	65.982	66.07
289	0	66.087	66.09
289.1	0	66.15	66.146
289.2	0	66.192	66.235
289.3	0	66.234	66.325
289.4	0	66.297	66.416
289.5	0	66.339	66.505
289.6	0	66.38	66.596
289.7	0	66.422	66.685
289.8	0	66.485	66.775
289.9	0	66.527	66.866
290	0	66.59	66.955
290.1	0	66.632	67.01
290.2	0	66.695	67.03
290.3	0	66.757	67.05
290.4	0	66.799	67.07
290.5	0	66.862	67.09
290.6	0	66.904	67.11
290.7	0	66.946	67.13
290.8	0	67.009	67.15
290.9	0	67.009	67.17
291	0	67.093	67.19
291.1	0	67.134	67.215
291.2	0	67.197	67.245
291.3	0	67.197	67.275
291.4	0	67.218	67.305
291.5	0	67.302	67.335
291.6	0	67.344	67.365
291.7	0	67.386	67.395
291.8	0	67.386	67.425
291.9	0	67.47	67.455
292	0	67.512	67.485
292.1	0	67.553	67.541
292.2	0	67.553	67.62
292.3	0	67.574	67.7



292.4	0	67.658	67.781
292.5	0	67.7	67.86
292.6	0	67.7	67.941
292.7	0	67.742	68.02
292.8	0	67.784	68.1
292.9	0	67.868	68.181
293	0	67.868	68.26
293.1	0	67.91	68.3
293.2	0	67.951	68.3
293.3	0	68.035	68.3
293.4	0	68.077	68.3
293.5	0	68.077	68.3
293.6	0	68.119	68.3
293.7	0	68.161	68.3
293.8	0	68.245	68.3
293.9	0	68.245	68.3
294	0	68.287	68.3
294.1	0	68.349	68.326
294.2	0	68.391	68.375
294.3	0	68.433	68.425
294.4	0	68.496	68.476
294.5	0	68.538	68.525
294.6	0	68.601	68.576
294.7	0	68.685	68.625
294.8	0	68.685	68.675
294.9	0	68.726	68.726
295	0	68.789	68.775
295.1	0	68.831	68.815
295.2	0	68.873	68.845
295.3	0	68.915	68.875
295.4	0	68.978	68.905
295.5	0	69.02	68.935
295.6	0	69.062	68.965
295.7	0	69.124	68.995
295.8	0	69.166	69.025
295.9	0	69.229	69.055
296	0	69.292	69.085
296.1	0	69.355	69.115
296.2	0	69.418	69.145
296.3	0	69.481	69.175
296.4	0	69.543	69.205
296.5	0	69.627	69.235
296.6	0	69.69	69.265
296.7	0	69.774	69.295
296.8	0	69.858	69.325

296.9	0	69.962	69.355
297	0	70.067	69.385
297.1	0	70.172	69.517
297.2	0	70.297	69.745
297.3	0	70.423	69.975
297.4	0	70.57	70.207
297.5	0	70.695	70.435
297.6	0	70.821	70.667
297.7	0	70.968	70.895
297.8	0	71.093	71.125
297.9	0	71.24	71.357
298	0	71.387	71.585
298.1	0	71.533	71.72
298.2	0	71.68	71.76
298.3	0	71.848	71.8
298.4	0	72.036	71.84
298.5	0	72.225	71.88
298.6	0	72.434	71.92
298.7	0	72.664	71.96
298.8	0	72.937	72
298.9	0	73.23	72.04
299	0	73.544	72.08
299.1	0	73.837	72.243
299.2	0	74.152	72.52
299.3	0	74.466	72.8
299.4	0	74.78	73.083
299.5	0	75.052	73.36
299.6	0	75.283	73.643
299.7	0	75.429	73.92
299.8	0	75.492	74.2
299.9	0	75.492	74.483
300	0	75.492	74.76
300.1	0	75.408	74.783
300.2	0	75.325	74.555
300.3	0	75.241	74.325
300.4	0	75.136	74.093
300.5	0	75.136	73.865
300.6	0	74.759	73.633
300.7	0	74.55	73.405
300.8	0	74.298	73.175
300.9	0	74.298	72.943
301	0	74.026	72.715
301.1	0	73.377	72.58
301.2	0	73.167	72.54
301.3	0	73	72.5

301.4	0	73	72.46
301.5	0	72.874	72.42
301.6	0	72.644	72.38
301.7	0	72.539	72.34
301.8	0	72.539	72.3
301.9	0	72.539	72.26
302	0	72.392	72.22
302.1	0	72.371	72.2
302.2	0	72.371	72.2
302.3	0	72.371	72.2
302.4	0	72.371	72.2
302.5	0	72.371	72.2
302.6	0	72.371	72.2
302.7	0	72.371	72.2
302.8	0	72.371	72.2
302.9	0	72.371	72.2
303	0	72.392	72.2
303.1	0	72.392	72.19
303.2	0	72.413	72.17
303.3	0	72.434	72.15
303.4	0	72.476	72.13
303.5	0	72.518	72.11
303.6	0	72.518	72.09
303.7	0	72.539	72.07
303.8	0	72.56	72.05
303.9	0	72.623	72.03
304	0	72.623	72.01
304.1	0	72.623	72.025
304.2	0	72.644	72.075
304.3	0	72.644	72.125
304.4	0	72.644	72.175
304.5	0	72.644	72.225
304.6	0	72.664	72.275
304.7	0	72.664	72.325
304.8	0	72.664	72.375
304.9	0	72.685	72.425
305	0	72.706	72.475
305.1	0	72.727	72.515
305.2	0	72.769	72.545
305.3	0	72.79	72.575
305.4	0	72.811	72.605
305.5	0	72.832	72.635
305.6	0	72.853	72.665
305.7	0	72.874	72.695
305.8	0	72.895	72.725

305.9	0	72.916	72.755
306	0	72.895	72.785
306.1	0	72.874	72.795
306.2	0	72.853	72.785
306.3	0	72.79	72.775
306.4	0	72.727	72.765
306.5	0	72.664	72.755
306.6	0	72.581	72.745
306.7	0	72.497	72.735
306.8	0	72.413	72.725
306.9	0	72.329	72.715
307	0	72.246	72.705
307.1	0	72.141	72.654
307.2	0	72.057	72.565
307.3	0	71.973	72.475
307.4	0	71.889	72.384
307.5	0	71.827	72.295
307.6	0	71.785	72.204
307.7	0	71.722	72.115
307.8	0	71.701	72.025
307.9	0	71.659	71.934
308	0	71.638	71.845
308.1	0	71.617	71.78
308.2	0	71.596	71.74
308.3	0	71.575	71.7
308.4	0	71.554	71.66
308.5	0	71.533	71.62
308.6	0	71.533	71.58
308.7	0	71.533	71.54
308.8	0	71.533	71.5
308.9	0	71.554	71.46
309	0	71.554	71.42
309.1	0	71.554	71.385
309.2	0	71.554	71.355
309.3	0	71.554	71.325
309.4	0	71.512	71.295
309.5	0	71.491	71.265
309.6	0	71.47	71.235
309.7	0	71.47	71.205
309.8	0	71.408	71.175
309.9	0	71.387	71.145
310	0	71.345	71.115
310.1	0	71.324	71.1
310.2	0	71.324	71.1
310.3	0	71.282	71.1

310.4	0	71.261	71.1
310.5	0	71.261	71.1
310.6	0	71.261	71.1
310.7	0	71.24	71.1
310.8	0	71.24	71.1
310.9	0	71.24	71.1
311	0	71.261	71.1
311.1	0	71.261	71.09
311.2	0	71.261	71.07
311.3	0	71.303	71.05
311.4	0	71.303	71.03
311.5	0	71.303	71.01
311.6	0	71.324	70.99
311.7	0	71.366	70.97
311.8	0	71.366	70.95
311.9	0	71.366	70.93
312	0	71.387	70.91
312.1	0	71.408	70.905
312.2	0	71.429	70.915
312.3	0	71.429	70.925
312.4	0	71.429	70.935
312.5	0	71.429	70.945
312.6	0	71.429	70.955
312.7	0	71.408	70.965
312.8	0	71.408	70.975
312.9	0	71.387	70.985
313	0	71.387	70.995
313.1	0	71.366	71
313.2	0	71.366	71
313.3	0	71.366	71
313.4	0	71.366	71
313.5	0	71.366	71
313.6	0	71.345	71
313.7	0	71.345	71
313.8	0	71.345	71
313.9	0	71.366	71
314	0	71.366	71
314.1	0	71.387	71.01
314.2	0	71.387	71.03
314.3	0	71.408	71.05
314.4	0	71.429	71.07
314.5	0	71.45	71.09
314.6	0	71.47	71.11
314.7	0	71.491	71.13
314.8	0	71.512	71.15

314.9	0	71.512	71.17
315	0	71.575	71.19
315.1	0	71.617	71.246
315.2	0	71.659	71.335
315.3	0	71.701	71.425
315.4	0	71.743	71.516
315.5	0	71.785	71.605
315.6	0	71.827	71.696
315.7	0	71.868	71.785
315.8	0	71.91	71.875
315.9	0	71.952	71.966
316	0	71.994	72.055
316.1	0	72.036	72.125
316.2	0	72.078	72.175
316.3	0	72.12	72.225
316.4	0	72.162	72.275
316.5	0	72.204	72.325
316.6	0	72.246	72.375
316.7	0	72.287	72.425
316.8	0	72.329	72.475
316.9	0	72.392	72.525
317	0	72.434	72.575
317.1	0	72.476	72.651
317.2	0	72.539	72.75
317.3	0	72.602	72.85
317.4	0	72.644	72.951
317.5	0	72.706	73.05
317.6	0	72.769	73.151
317.7	0	72.832	73.25
317.8	0	72.895	73.35
317.9	0	72.979	73.451
318	0	73.041	73.55
318.1	0	73.125	73.661
318.2	0	73.209	73.78
318.3	0	73.293	73.9
318.4	0	73.398	74.021
318.5	0	73.481	74.14
318.6	0	73.586	74.261
318.7	0	73.691	74.38
318.8	0	73.817	74.5
318.9	0	73.817	74.621
319	0	74.089	74.74
319.1	0	74.235	74.846
319.2	0	74.382	74.935
319.3	0	74.382	75.025

319.4	0	74.654	75.116
319.5	0	74.801	75.205
319.6	0	74.948	75.296
319.7	0	75.073	75.385
319.8	0	75.073	75.475
319.9	0	75.388	75.566
320	0	75.576	75.655
320.1	0	75.786	75.782
320.2	0	75.786	75.94
320.3	0	75.995	76.1
320.4	0	76.435	76.262
320.5	0	76.665	76.42
320.6	0	76.665	76.582
320.7	0	76.875	76.74
320.8	0	77.315	76.9
320.9	0	77.545	77.062
321	0	77.545	77.22
321.1	0	77.755	77.356
321.2	0	77.964	77.465
321.3	0	78.404	77.575
321.4	0	78.592	77.686
321.5	0	78.592	77.795
321.6	0	78.76	77.906
321.7	0	78.865	78.015
321.8	0	78.99	78.125
321.9	0	78.99	78.236
322	0	79.032	78.345
322.1	0	79.095	78.446
322.2	0	79.179	78.535
322.3	0	79.179	78.625
322.4	0	79.221	78.716
322.5	0	79.263	78.805
322.6	0	79.284	78.896
322.7	0	79.326	78.985
322.8	0	79.326	79.075
322.9	0	79.326	79.166
323	0	79.326	79.255
323.1	0	79.284	79.244
323.2	0	79.242	79.135
323.3	0	79.158	79.025
323.4	0	79.074	78.914
323.5	0	78.99	78.805
323.6	0	78.907	78.694
323.7	0	78.802	78.585
323.8	0	78.697	78.475

323.9	0	78.592	78.364
324	0	78.467	78.255
324.1	0	78.299	78.088
324.2	0	78.09	77.87
324.3	0	77.859	77.65
324.4	0	77.608	77.428
324.5	0	77.336	77.21
324.6	0	77.063	76.988
324.7	0	76.833	76.77
324.8	0	76.644	76.55
324.9	0	76.498	76.328
325	0	76.372	76.11
325.1	0	76.267	75.98
325.2	0	76.142	75.94
325.3	0	76.037	75.9
325.4	0	75.974	75.86
325.5	0	75.911	75.82
325.6	0	75.89	75.78
325.7	0	75.869	75.74
325.8	0	75.89	75.7
325.9	0	75.911	75.66
326	0	75.953	75.62
326.1	0	75.995	75.641
326.2	0	76.016	75.72
326.3	0	76.058	75.8
326.4	0	76.1	75.881
326.5	0	76.142	75.96
326.6	0	76.184	76.041
326.7	0	76.246	76.12
326.8	0	76.288	76.2
326.9	0	76.33	76.281
327	0	76.393	76.36
327.1	0	76.435	76.461
327.2	0	76.498	76.58
327.3	0	76.561	76.7
327.4	0	76.602	76.821
327.5	0	76.665	76.94
327.6	0	76.728	77.061
327.7	0	76.791	77.18
327.8	0	76.791	77.3
327.9	0	76.896	77.421
328	0	76.959	77.54
328.1	0	77.021	77.62
328.2	0	77.084	77.66
328.3	0	77.084	77.7



328.4	0	77.189	77.74
328.5	0	77.273	77.78
328.6	0	77.336	77.82
328.7	0	77.419	77.86
328.8	0	77.419	77.9
328.9	0	77.587	77.94
329	0	77.692	77.98
329.1	0	77.775	78.056
329.2	0	77.775	78.165
329.3	0	77.943	78.275
329.4	0	78.027	78.386
329.5	0	78.111	78.495
329.6	0	78.111	78.606
329.7	0	78.194	78.715
329.8	0	78.383	78.825
329.9	0	78.467	78.936
330	0	78.55	79.045
330.1	0	78.55	79.12
330.2	0	78.634	79.16
330.3	0	78.739	79.2
330.4	0	78.802	79.24
330.5	0	78.802	79.28
330.6	0	78.865	79.32
330.7	0	78.948	79.36
330.8	0	79.011	79.4
330.9	0	79.011	79.44
331	0	79.053	79.48
331.1	0	79.116	79.52
331.2	0	79.2	79.56
331.3	0	79.263	79.6
331.4	0	79.263	79.64
331.5	0	79.305	79.68
331.6	0	79.346	79.72
331.7	0	79.43	79.76
331.8	0	79.43	79.8
331.9	0	79.472	79.84
332	0	79.514	79.88
332.1	0	79.556	79.9
332.2	0	79.598	79.9
332.3	0	79.64	79.9
332.4	0	79.682	79.9
332.5	0	79.724	79.9
332.6	0	79.828	79.9
332.7	0	79.828	79.9
332.8	0	79.87	79.9

332.9	0	79.912	79.9
333	0	79.975	79.9
333.1	0	80.017	79.92
333.2	0	80.038	79.96
333.3	0	80.08	80
333.4	0	80.122	80.04
333.5	0	80.142	80.08
333.6	0	80.184	80.12
333.7	0	80.205	80.16
333.8	0	80.226	80.2
333.9	0	80.268	80.24
334	0	80.289	80.28
334.1	0	80.289	80.3
334.2	0	80.31	80.3
334.3	0	80.31	80.3
334.4	0	80.331	80.3
334.5	0	80.331	80.3
334.6	0	80.352	80.3
334.7	0	80.352	80.3
334.8	0	80.352	80.3
334.9	0	80.352	80.3
335	0	80.352	80.3
335.1	0	80.352	80.259
335.2	0	80.331	80.18
335.3	0	80.289	80.1
335.4	0	80.247	80.019
335.5	0	80.226	79.94
335.6	0	80.184	79.859
335.7	0	80.163	79.78
335.8	0	80.122	79.7
335.9	0	80.101	79.619
336	0	80.059	79.54
336.1	0	80.038	79.5
336.2	0	79.996	79.5
336.3	0	79.975	79.5
336.4	0	79.933	79.5
336.5	0	79.912	79.5
336.6	0	79.912	79.5
336.7	0	79.912	79.5
336.8	0	79.891	79.5
336.9	0	79.891	79.5
337	0	79.87	79.5
337.1	0	79.849	79.48
337.2	0	79.807	79.44
337.3	0	79.744	79.4

337.4	0	79.744	79.36
337.5	0	79.619	79.32
337.6	0	79.535	79.28
337.7	0	79.451	79.24
337.8	0	79.367	79.2
337.9	0	79.263	79.16
338	0	79.158	79.12
338.1	0	79.053	79.08
338.2	0	78.948	79.04
338.3	0	78.948	79
338.4	0	78.739	78.96
338.5	0	78.655	78.92
338.6	0	78.55	78.88
338.7	0	78.55	78.84
338.8	0	78.446	78.8
338.9	0	78.257	78.76
339	0	78.194	78.72
339.1	0	78.132	78.644
339.2	0	78.132	78.535
339.3	0	77.985	78.425
339.4	0	77.901	78.314
339.5	0	77.817	78.205
339.6	0	77.817	78.094
339.7	0	77.713	77.985
339.8	0	77.524	77.875
339.9	0	77.419	77.764
340	0	77.315	77.655
340.1	0	77.315	77.544
340.2	0	77.21	77.435
340.3	0	77.021	77.325
340.4	0	76.917	77.214
340.5	0	76.917	77.105
340.6	0	76.812	76.994
340.7	0	76.686	76.885
340.8	0	76.582	76.775
340.9	0	76.582	76.664
341	0	76.351	76.555
341.1	0	76.225	76.388
341.2	0	76.121	76.17
341.3	0	75.89	75.95
341.4	0	75.89	75.728
341.5	0	75.765	75.51
341.6	0	75.639	75.288
341.7	0	75.492	75.07
341.8	0	75.325	74.85

341.9	0	75.136	74.628
342	0	74.927	74.41
342.1	0	74.696	74.213
342.2	0	74.152	74.045
342.3	0	74.152	73.875
342.4	0	73.837	73.703
342.5	0	73.502	73.535
342.6	0	73.146	73.363
342.7	0	72.79	73.195
342.8	0	72.455	73.025
342.9	0	72.12	72.853
343	0	71.889	72.685
343.1	0	71.722	72.508
343.2	0	71.575	72.33
343.3	0	71.45	72.15
343.4	0	71.324	71.968
343.5	0	71.219	71.79
343.6	0	71.093	71.608
343.7	0	70.989	71.43
343.8	0	70.863	71.25
343.9	0	70.737	71.068
344	0	70.633	70.89
344.1	0	70.507	70.637
344.2	0	70.381	70.32
344.3	0	70.193	70
344.4	0	69.983	69.677
344.5	0	69.753	69.36
344.6	0	69.543	69.037
344.7	0	69.292	68.72
344.8	0	69.062	68.4
344.9	0	68.831	68.077
345	0	68.601	67.76
345.1	0	68.37	67.539
345.2	0	68.182	67.42
345.3	0	67.972	67.3
345.4	0	67.805	67.179
345.5	0	67.658	67.06
345.6	0	67.532	66.939
345.7	0	67.407	66.82
345.8	0	67.302	66.7
345.9	0	67.197	66.579
346	0	67.093	66.46
346.1	0	66.988	66.415
346.2	0	66.904	66.445
346.3	0	66.82	66.475

346.4	0	66.778	66.505
346.5	0	66.737	66.535
346.6	0	66.716	66.565
346.7	0	66.716	66.595
346.8	0	66.716	66.625
346.9	0	66.716	66.655
347	0	66.716	66.685
347.1	0	66.716	66.669
347.2	0	66.695	66.61
347.3	0	66.674	66.55
347.4	0	66.611	66.489
347.5	0	66.611	66.43
347.6	0	66.506	66.369
347.7	0	66.422	66.31
347.8	0	66.359	66.25
347.9	0	66.276	66.189
348	0	66.276	66.13
348.1	0	66.129	66.09
348.2	0	66.045	66.07
348.3	0	65.961	66.05
348.4	0	65.961	66.03
348.5	0	65.878	66.01
348.6	0	65.731	65.99
348.7	0	65.668	65.97
348.8	0	65.647	65.95
348.9	0	65.647	65.93
349	0	65.626	65.91
349.1	0	65.626	65.915
349.2	0	65.626	65.945
349.3	0	65.626	65.975
349.4	0	65.647	66.005
349.5	0	65.668	66.035
349.6	0	65.71	66.065
349.7	0	65.71	66.095
349.8	0	65.752	66.125
349.9	0	65.794	66.155
350	0	65.857	66.185
350.1	0	65.899	66.195
350.2	0	65.899	66.185
350.3	0	65.941	66.175
350.4	0	65.961	66.165
350.5	0	66.045	66.155
350.6	0	66.045	66.145
350.7	0	66.066	66.135
350.8	0	66.108	66.125

350.9	0	66.171	66.115
351	0	66.213	66.105
351.1	0	66.255	66.151
351.2	0	66.318	66.25
351.3	0	66.359	66.35
351.4	0	66.443	66.451
351.5	0	66.443	66.55
351.6	0	66.485	66.651
351.7	0	66.527	66.75
351.8	0	66.59	66.85
351.9	0	66.632	66.951
352	0	66.674	67.05
352.1	0	66.716	67.115
352.2	0	66.757	67.145
352.3	0	66.799	67.175
352.4	0	66.841	67.205
352.5	0	66.883	67.235
352.6	0	66.925	67.265
352.7	0	66.967	67.295
352.8	0	67.009	67.325
352.9	0	67.051	67.355
353	0	67.093	67.385
353.1	0	67.155	67.446
353.2	0	67.197	67.535
353.3	0	67.239	67.625
353.4	0	67.302	67.716
353.5	0	67.344	67.805
353.6	0	67.407	67.896
353.7	0	67.449	67.985
353.8	0	67.449	68.075
353.9	0	67.574	68.166
354	0	67.616	68.255
354.1	0	67.658	68.3
354.2	0	67.721	68.3
354.3	0	67.784	68.3
354.4	0	67.826	68.3
354.5	0	67.889	68.3
354.6	0	67.93	68.3
354.7	0	67.993	68.3
354.8	0	68.035	68.3
354.9	0	68.098	68.3
355	0	68.14	68.3
355.1	0	68.182	68.32
355.2	0	68.224	68.36
355.3	0	68.287	68.4

355.4	0	68.328	68.44
355.5	0	68.37	68.48
355.6	0	68.391	68.52
355.7	0	68.412	68.56
355.8	0	68.433	68.6
355.9	0	68.433	68.64
356	0	68.454	68.682
356.1	0	68.475	68.674
356.2	0	68.496	68.625
356.3	0	68.517	68.575
356.4	0	68.538	68.524
356.5	0	68.559	68.475
356.6	0	68.559	68.424
356.7	0	68.601	68.375
356.8	0	68.622	68.325
356.9	0	68.622	68.274
357	0	68.601	68.225
357.1	0	68.601	68.195
357.2	0	68.559	68.185
357.3	0	68.538	68.175
357.4	0	68.517	68.165
357.5	0	68.517	68.155
357.6	0	68.475	68.145
357.7	0	68.454	68.135
357.8	0	68.433	68.125
357.9	0	68.433	68.115
358	0	68.433	68.105
358.1	0	68.412	68.095
358.2	0	68.391	68.085
358.3	0	68.37	68.075
358.4	0	68.37	68.065
358.5	0	68.37	68.055
358.6	0	68.328	68.045
358.7	0	68.287	68.035
358.8	0	68.287	68.025
358.9	0	68.245	68.015
359	0	68.182	68.005
359.1	0	68.056	67.954
359.2	0	67.993	67.865
359.3	0	67.993	67.775
359.4	0	67.91	67.684
359.5	0	67.826	67.595
359.6	0	67.658	67.504
359.7	0	67.658	67.415
359.8	0	67.553	67.325

359.9	0	67.449	67.234
360	0	67.26	67.145
360.1	0	67.26	67.064
360.2	0	67.155	66.995
360.3	0	67.051	66.925
360.4	0	66.988	66.854
360.5	0	66.841	66.785
360.6	0	66.841	66.714
360.7	0	66.778	66.645
360.8	0	66.716	66.575
360.9	0	66.653	66.504
361	0	66.611	66.435
361.1	0	66.569	66.385
361.2	0	66.506	66.355
361.3	0	66.485	66.325
361.4	0	66.443	66.295
361.5	0	66.422	66.265
361.6	0	66.38	66.235
361.7	0	66.359	66.205
361.8	0	66.339	66.175
361.9	0	66.297	66.145
362	0	66.276	66.115
362.1	0	66.234	66.08
362.2	0	66.192	66.04
362.3	0	66.15	66
362.4	0	66.108	65.96
362.5	0	66.066	65.92
362.6	0	66.024	65.88
362.7	0	66.024	65.84
362.8	0	66.003	65.8
362.9	0	66.003	65.76
363	0	66.024	65.72
363.1	0	66.045	65.715
363.2	0	66.045	65.745
363.3	0	66.087	65.775
363.4	0	66.108	65.805
363.5	0	66.129	65.835
363.6	0	66.171	65.865
363.7	0	66.192	65.895
363.8	0	66.234	65.925
363.9	0	66.255	65.955
364	0	66.297	65.985
364.1	0	66.339	66.02
364.2	0	66.359	66.06
364.3	0	66.401	66.1



364.4	0	66.422	66.14
364.5	0	66.443	66.18
364.6	0	66.464	66.22
364.7	0	66.485	66.26
364.8	0	66.485	66.3
364.9	0	66.485	66.34
365	0	66.485	66.38
365.1	0	66.464	66.38
365.2	0	66.464	66.34
365.3	0	66.443	66.3
365.4	0	66.443	66.26
365.5	0	66.443	66.22
365.6	0	66.464	66.18
365.7	0	66.464	66.14
365.8	0	66.506	66.1
365.9	0	66.506	66.06
366	0	66.527	66.02
366.1	0	66.548	66.015
366.2	0	66.569	66.045
366.3	0	66.59	66.075
366.4	0	66.611	66.105
366.5	0	66.632	66.135
366.6	0	66.632	66.165
366.7	0	66.695	66.195
366.8	0	66.695	66.225
366.9	0	66.737	66.255
367	0	66.737	66.285
367.1	0	66.778	66.336
367.2	0	66.82	66.405
367.3	0	66.862	66.475
367.4	0	66.904	66.546
367.5	0	66.904	66.615
367.6	0	66.946	66.686
367.7	0	67.009	66.755
367.8	0	67.051	66.825
367.9	0	67.051	66.896
368	0	67.093	66.965
368.1	0	67.134	67.025
368.2	0	67.218	67.075
368.3	0	67.239	67.125
368.4	0	67.239	67.175
368.5	0	67.281	67.225
368.6	0	67.344	67.275
368.7	0	67.386	67.325
368.8	0	67.386	67.375

368.9	0	67.407	67.425
369	0	67.449	67.475
369.1	0	67.512	67.52
369.2	0	67.553	67.56
369.3	0	67.553	67.6
369.4	0	67.574	67.64
369.5	0	67.616	67.68
369.6	0	67.679	67.72
369.7	0	67.679	67.76
369.8	0	67.721	67.8
369.9	0	67.742	67.84
370	0	67.784	67.88
370.1	0	67.826	67.91
370.2	0	67.847	67.93
370.3	0	67.889	67.95
370.4	0	67.93	67.97
370.5	0	67.993	67.99
370.6	0	68.035	68.01
370.7	0	68.077	68.03
370.8	0	68.119	68.05
370.9	0	68.182	68.07
371	0	68.224	68.09
371.1	0	68.266	68.12
371.2	0	68.328	68.16
371.3	0	68.37	68.2
371.4	0	68.412	68.24
371.5	0	68.454	68.28
371.6	0	68.496	68.32
371.7	0	68.538	68.36
371.8	0	68.58	68.4
371.9	0	68.643	68.44
372	0	68.664	68.48
372.1	0	68.706	68.52
372.2	0	68.747	68.56
372.3	0	68.789	68.6
372.4	0	68.831	68.64
372.5	0	68.873	68.68
372.6	0	68.915	68.72
372.7	0	68.936	68.76
372.8	0	68.957	68.8
372.9	0	68.978	68.84
373	0	68.978	68.88
373.1	0	68.999	68.885
373.2	0	69.02	68.855
373.3	0	69.041	68.825

373.4	0	69.062	68.795
373.5	0	69.103	68.765
373.6	0	69.145	68.735
373.7	0	69.187	68.705
373.8	0	69.208	68.675
373.9	0	69.25	68.645
374	0	69.271	68.615
374.1	0	69.313	68.641
374.2	0	69.355	68.72
374.3	0	69.376	68.8
374.4	0	69.418	68.881
374.5	0	69.439	68.96
374.6	0	69.46	69.041
374.7	0	69.481	69.12
374.8	0	69.501	69.2
374.9	0	69.522	69.281
375	0	69.543	69.36
375.1	0	69.564	69.4
375.2	0	69.564	69.4
375.3	0	69.585	69.4
375.4	0	69.585	69.4
375.5	0	69.627	69.4
375.6	0	69.627	69.4
375.7	0	69.648	69.4
375.8	0	69.669	69.4
375.9	0	69.669	69.4
376	0	69.711	69.4
376.1	0	69.711	69.4
376.2	0	69.732	69.4
376.3	0	69.732	69.4
376.4	0	69.753	69.4
376.5	0	69.774	69.4
376.6	0	69.795	69.4
376.7	0	69.816	69.4
376.8	0	69.816	69.4
376.9	0	69.837	69.4
377	0	69.879	69.4
377.1	0	69.92	69.431
377.2	0	69.92	69.49
377.3	0	69.962	69.55
377.4	0	70.025	69.611
377.5	0	70.067	69.67
377.6	0	70.088	69.731
377.7	0	70.088	69.79
377.8	0	70.13	69.85

377.9	0	70.193	69.911
378	0	70.235	69.97
378.1	0	70.235	70.02
378.2	0	70.277	70.06
378.3	0	70.297	70.1
378.4	0	70.381	70.14
378.5	0	70.381	70.18
378.6	0	70.402	70.22
378.7	0	70.423	70.26
378.8	0	70.465	70.3
378.9	0	70.507	70.34
379	0	70.507	70.38
379.1	0	70.549	70.41
379.2	0	70.57	70.43
379.3	0	70.633	70.45
379.4	0	70.633	70.47
379.5	0	70.654	70.49
379.6	0	70.675	70.51
379.7	0	70.695	70.53
379.8	0	70.695	70.55
379.9	0	70.758	70.57
380	0	70.779	70.59
380.1	0	70.821	70.615
380.2	0	70.842	70.645
380.3	0	70.863	70.675
380.4	0	70.884	70.705
380.5	0	70.926	70.735
380.6	0	70.947	70.765
380.7	0	70.968	70.795
380.8	0	70.989	70.825
380.9	0	71.01	70.855
381	0	71.031	70.885
381.1	0	71.01	70.869
381.2	0	71.01	70.81
381.3	0	70.968	70.75
381.4	0	70.926	70.689
381.5	0	70.884	70.63
381.6	0	70.842	70.569
381.7	0	70.8	70.51
381.8	0	70.758	70.45
381.9	0	70.716	70.389
382	0	70.675	70.33
382.1	0	70.654	70.315
382.2	0	70.633	70.345
382.3	0	70.612	70.375

382.4	0	70.591	70.405
382.5	0	70.591	70.435
382.6	0	70.57	70.465
382.7	0	70.591	70.495
382.8	0	70.591	70.525
382.9	0	70.591	70.555
383	0	70.591	70.585
383.1	0	70.612	70.585
383.2	0	70.612	70.555
383.3	0	70.633	70.525
383.4	0	70.633	70.495
383.5	0	70.654	70.465
383.6	0	70.654	70.435
383.7	0	70.654	70.405
383.8	0	70.633	70.375
383.9	0	70.612	70.345
384	0	70.57	70.315
384.1	0	70.549	70.269
384.2	0	70.507	70.21
384.3	0	70.465	70.15
384.4	0	70.423	70.089
384.5	0	70.381	70.03
384.6	0	70.339	69.969
384.7	0	70.297	69.91
384.8	0	70.256	69.85
384.9	0	70.235	69.789
385	0	70.193	69.73
385.1	0	70.193	69.71
385.2	0	70.172	69.73
385.3	0	70.151	69.75
385.4	0	70.151	69.77
385.5	0	70.151	69.79
385.6	0	70.172	69.81
385.7	0	70.193	69.83
385.8	0	70.214	69.85
385.9	0	70.235	69.87
386	0	70.235	69.89
386.1	0	70.277	69.91
386.2	0	70.297	69.93
386.3	0	70.297	69.95
386.4	0	70.297	69.97
386.5	0	70.318	69.99
386.6	0	70.339	70.01
386.7	0	70.339	70.03
386.8	0	70.339	70.05

386.9	0	70.318	70.07
387	0	70.297	70.09
387.1	0	70.277	70.075
387.2	0	70.256	70.025
387.3	0	70.256	69.975
387.4	0	70.256	69.924
387.5	0	70.235	69.875
387.6	0	70.193	69.825
387.7	0	70.193	69.775
387.8	0	70.172	69.725
387.9	0	70.151	69.674
388	0	70.151	69.625
388.1	0	70.193	69.585
388.2	0	70.193	69.555
388.3	0	70.193	69.525
388.4	0	70.214	69.495
388.5	0	70.235	69.465
388.6	0	70.214	69.435
388.7	0	70.214	69.405
388.8	0	70.193	69.375
388.9	0	70.172	69.345
389	0	70.13	69.315
389.1	0	70.109	69.331
389.2	0	70.067	69.39
389.3	0	70.046	69.45
389.4	0	70.025	69.511
389.5	0	70.004	69.57
389.6	0	69.983	69.631
389.7	0	69.983	69.69
389.8	0	69.983	69.75
389.9	0	69.983	69.811
390	0	69.983	69.87
390.1	0	70.004	69.89
390.2	0	70.004	69.87
390.3	0	70.004	69.85
390.4	0	70.004	69.83
390.5	0	70.004	69.81
390.6	0	70.004	69.79
390.7	0	69.983	69.77
390.8	0	69.962	69.75
390.9	0	69.941	69.73
391	0	69.92	69.71
391.1	0	69.92	69.69
391.2	0	69.899	69.67
391.3	0	69.899	69.65

391.4	0	69.879	69.63
391.5	0	69.879	69.61
391.6	0	69.899	69.59
391.7	0	69.899	69.57
391.8	0	69.92	69.55
391.9	0	69.92	69.53
392	0	69.941	69.51
392.1	0	69.941	69.52
392.2	0	69.962	69.56
392.3	0	69.962	69.6
392.4	0	69.983	69.64
392.5	0	69.983	69.68
392.6	0	70.004	69.72
392.7	0	70.025	69.76
392.8	0	70.025	69.8
392.9	0	70.046	69.84
393	0	70.067	69.88
393.1	0	70.088	69.915
393.2	0	70.109	69.945
393.3	0	70.13	69.975
393.4	0	70.151	70.005
393.5	0	70.172	70.035
393.6	0	70.193	70.065
393.7	0	70.214	70.095
393.8	0	70.235	70.125
393.9	0	70.235	70.155
394	0	70.256	70.185
394.1	0	70.256	70.2
394.2	0	70.277	70.2
394.3	0	70.277	70.2
394.4	0	70.277	70.2
394.5	0	70.277	70.2
394.6	0	70.277	70.2
394.7	0	70.277	70.2
394.8	0	70.277	70.2
394.9	0	70.277	70.2
395	0	70.297	70.2
395.1	0	70.297	70.2
395.2	0	70.297	70.2
395.3	0	70.297	70.2
395.4	0	70.339	70.2
395.5	0	70.36	70.2
395.6	0	70.381	70.2
395.7	0	70.381	70.2
395.8	0	70.423	70.2

395.9	0	70.444	70.2
396	0	70.486	70.2
396.1	0	70.486	70.241
396.2	0	70.486	70.32
396.3	0	70.528	70.4
396.4	0	70.528	70.481
396.5	0	70.528	70.56
396.6	0	70.528	70.641
396.7	0	70.549	70.72
396.8	0	70.549	70.8
396.9	0	70.57	70.881
397	0	70.57	70.96
397.1	0	70.591	70.99
397.2	0	70.612	70.97
397.3	0	70.654	70.95
397.4	0	70.654	70.93
397.5	0	70.675	70.91
397.6	0	70.695	70.89
397.7	0	70.716	70.87
397.8	0	70.779	70.85
397.9	0	70.779	70.83
398	0	70.8	70.81
398.1	0	70.821	70.805
398.2	0	70.842	70.815
398.3	0	70.842	70.825
398.4	0	70.842	70.835
398.5	0	70.863	70.845
398.6	0	70.863	70.855
398.7	0	70.863	70.865
398.8	0	70.884	70.875
398.9	0	70.884	70.885
399	0	70.884	70.895
399.1	0	70.905	70.89
399.2	0	70.905	70.87
399.3	0	70.926	70.85
399.4	0	70.947	70.83
399.5	0	70.947	70.81
399.6	0	70.968	70.79
399.7	0	70.968	70.77
399.8	0	70.989	70.75
399.9	0	71.01	70.73
400	0	71.01	70.71
400.1	0	71.031	70.71
400.2	0	71.031	70.73
400.3	0	71.052	70.75



400.4	0	71.052	70.77
400.5	0	71.072	70.79
400.6	0	71.072	70.81
400.7	0	71.093	70.83
400.8	0	71.114	70.85
400.9	0	71.114	70.87
401	0	71.135	70.89
401.1	0	71.156	70.915
401.2	0	71.177	70.945
401.3	0	71.198	70.975
401.4	0	71.219	71.005
401.5	0	71.24	71.035
401.6	0	71.261	71.065
401.7	0	71.282	71.095
401.8	0	71.303	71.125
401.9	0	71.303	71.155
402	0	71.324	71.185
402.1	0	71.345	71.205
402.2	0	71.366	71.215
402.3	0	71.387	71.225
402.4	0	71.387	71.235
402.5	0	71.408	71.245
402.6	0	71.408	71.255
402.7	0	71.387	71.265
402.8	0	71.387	71.275
402.9	0	71.366	71.285
403	0	71.345	71.295
403.1	0	71.324	71.275
403.2	0	71.303	71.225
403.3	0	71.282	71.175
403.4	0	71.282	71.125
403.5	0	71.303	71.075
403.6	0	71.324	71.025
403.7	0	71.324	70.975
403.8	0	71.324	70.925
403.9	0	71.345	70.875
404	0	71.345	70.825
404.1	0	71.366	70.82
404.2	0	71.387	70.86
404.3	0	71.387	70.9
404.4	0	71.408	70.94
404.5	0	71.429	70.98
404.6	0	71.429	71.02
404.7	0	71.429	71.06
404.8	0	71.45	71.1

404.9	0	71.491	71.14
405	0	71.512	71.18
405.1	0	71.533	71.225
405.2	0	71.533	71.275
405.3	0	71.575	71.325
405.4	0	71.596	71.375
405.5	0	71.617	71.425
405.6	0	71.617	71.475
405.7	0	71.638	71.525
405.8	0	71.68	71.575
405.9	0	71.68	71.625
406	0	71.68	71.675
406.1	0	71.701	71.71
406.2	0	71.722	71.73
406.3	0	71.764	71.75
406.4	0	71.806	71.77
406.5	0	71.806	71.79
406.6	0	71.827	71.81
406.7	0	71.868	71.83
406.8	0	71.889	71.85
406.9	0	71.889	71.87
407	0	71.931	71.89
407.1	0	71.952	71.936
407.2	0	72.015	72.005
407.3	0	72.015	72.075
407.4	0	72.036	72.146
407.5	0	72.078	72.215
407.6	0	72.099	72.286
407.7	0	72.12	72.355
407.8	0	72.162	72.425
407.9	0	72.183	72.496
408	0	72.204	72.565
408.1	0	72.266	72.585
408.2	0	72.266	72.555
408.3	0	72.287	72.525
408.4	0	72.308	72.495
408.5	0	72.329	72.465
408.6	0	72.35	72.435
408.7	0	72.371	72.405
408.8	0	72.392	72.375
408.9	0	72.413	72.345
409	0	72.434	72.315
409.1	0	72.455	72.3
409.2	0	72.455	72.3
409.3	0	72.476	72.3

409.4	0	72.476	72.3
409.5	0	72.497	72.3
409.6	0	72.518	72.3
409.7	0	72.518	72.3
409.8	0	72.539	72.3
409.9	0	72.539	72.3
410	0	72.539	72.3
410.1	0	72.56	72.29
410.2	0	72.56	72.27
410.3	0	72.56	72.25
410.4	0	72.581	72.23
410.5	0	72.581	72.21
410.6	0	72.581	72.19
410.7	0	72.602	72.17
410.8	0	72.602	72.15
410.9	0	72.602	72.13
411	0	72.602	72.11
411.1	0	72.602	72.095
411.2	0	72.602	72.085
411.3	0	72.623	72.075
411.4	0	72.623	72.065
411.5	0	72.644	72.055
411.6	0	72.644	72.045
411.7	0	72.664	72.035
411.8	0	72.685	72.025
411.9	0	72.685	72.015
412	0	72.706	72.005
412.1	0	72.706	71.995
412.2	0	72.727	71.985
412.3	0	72.727	71.975
412.4	0	72.748	71.965
412.5	0	72.748	71.955
412.6	0	72.769	71.945
412.7	0	72.79	71.935
412.8	0	72.79	71.925
412.9	0	72.811	71.915
413	0	72.832	71.905
413.1	0	72.832	71.936
413.2	0	72.853	72.005
413.3	0	72.874	72.075
413.4	0	72.874	72.146
413.5	0	72.895	72.215
413.6	0	72.916	72.286
413.7	0	72.937	72.355
413.8	0	72.937	72.425

413.9	0	72.979	72.496
414	0	72.979	72.565
414.1	0	73	72.61
414.2	0	73	72.63
414.3	0	73	72.65
414.4	0	73	72.67
414.5	0	73	72.69
414.6	0	72.979	72.71
414.7	0	72.979	72.73
414.8	0	72.979	72.75
414.9	0	72.937	72.77
415	0	72.916	72.79
415.1	0	72.916	72.82
415.2	0	72.916	72.86
415.3	0	72.895	72.9
415.4	0	72.874	72.94
415.5	0	72.874	72.98
415.6	0	72.874	73.02
415.7	0	72.853	73.06
415.8	0	72.79	73.1
415.9	0	72.748	73.14
416	0	72.748	73.18
416.1	0	72.685	73.144
416.2	0	72.602	73.035
416.3	0	72.434	72.925
416.4	0	72.434	72.814
416.5	0	72.329	72.705
416.6	0	72.225	72.594
416.7	0	72.12	72.485
416.8	0	71.91	72.375
416.9	0	71.91	72.264
417	0	71.827	72.155
417.1	0	71.743	72.069
417.2	0	71.659	72.01
417.3	0	71.596	71.95
417.4	0	71.533	71.889
417.5	0	71.491	71.83
417.6	0	71.45	71.769
417.7	0	71.366	71.71
417.8	0	71.366	71.65
417.9	0	71.324	71.589
418	0	71.303	71.526
418.1	0	71.261	71.469
418.2	0	71.24	71.41
418.3	0	71.198	71.35

418.4	0	71.156	71.289
418.5	0	71.114	71.23
418.6	0	71.093	71.169
418.7	0	71.052	71.11
418.8	0	71.052	71.05
418.9	0	70.989	70.989
419	0	70.947	70.93
419.1	0	70.926	70.875
419.2	0	70.905	70.825
419.3	0	70.863	70.775
419.4	0	70.863	70.725
419.5	0	70.863	70.675
419.6	0	70.842	70.625
419.7	0	70.842	70.575
419.8	0	70.863	70.525
419.9	0	70.863	70.475
420	0	70.863	70.425
420.1	0	70.884	70.405
420.2	0	70.905	70.415
420.3	0	70.905	70.425
420.4	0	70.926	70.435
420.5	0	70.947	70.445
420.6	0	70.947	70.455
420.7	0	70.968	70.465
420.8	0	70.989	70.475
420.9	0	71.01	70.485
421	0	71.031	70.495
421.1	0	71.052	70.52
421.2	0	71.072	70.56
421.3	0	71.093	70.6
421.4	0	71.114	70.64
421.5	0	71.114	70.68
421.6	0	71.114	70.72
421.7	0	71.093	70.76
421.8	0	71.072	70.8
421.9	0	71.052	70.84
422	0	71.031	70.88
422.1	0	71.01	70.864
422.2	0	71.01	70.795
422.3	0	71.01	70.725
422.4	0	71.01	70.654
422.5	0	71.01	70.585
422.6	0	71.01	70.514
422.7	0	71.031	70.445
422.8	0	71.01	70.375

422.9	0	71.01	70.304
423	0	71.01	70.235
423.1	0	71.01	70.241
423.2	0	70.989	70.32
423.3	0	70.968	70.4
423.4	0	70.968	70.481
423.5	0	70.968	70.56
423.6	0	70.989	70.641
423.7	0	70.989	70.72
423.8	0	70.989	70.8
423.9	0	70.989	70.881
424	0	70.989	70.96
424.1	0	70.968	70.959
424.2	0	70.968	70.88
424.3	0	70.968	70.8
424.4	0	70.968	70.719
424.5	0	70.947	70.64
424.6	0	70.926	70.559
424.7	0	70.884	70.48
424.8	0	70.884	70.4
424.9	0	70.863	70.319
425	0	70.821	70.24
425.1	0	70.716	70.205
425.2	0	70.654	70.215
425.3	0	70.654	70.225
425.4	0	70.591	70.235
425.5	0	70.528	70.245
425.6	0	70.402	70.255
425.7	0	70.318	70.265
425.8	0	70.318	70.275
425.9	0	70.235	70.285
426	0	70.172	70.295
426.1	0	69.983	70.239
426.2	0	69.983	70.12
426.3	0	69.899	70
426.4	0	69.837	69.879
426.5	0	69.753	69.76
426.6	0	69.669	69.639
426.7	0	69.627	69.52
426.8	0	69.585	69.4
426.9	0	69.543	69.279
427	0	69.481	69.16
427.1	0	69.481	69.085
427.2	0	69.439	69.055
427.3	0	69.418	69.025

427.4	0	69.397	68.995
427.5	0	69.376	68.965
427.6	0	69.355	68.935
427.7	0	69.313	68.905
427.8	0	69.292	68.875
427.9	0	69.25	68.845
428	0	69.208	68.815
428.1	0	69.166	68.769
428.2	0	69.124	68.71
428.3	0	69.103	68.65
428.4	0	69.083	68.589
428.5	0	69.062	68.53
428.6	0	69.041	68.469
428.7	0	69.02	68.41
428.8	0	68.999	68.35
428.9	0	68.978	68.289
429	0	68.957	68.23
429.1	0	68.936	68.205
429.2	0	68.894	68.215
429.3	0	68.873	68.225
429.4	0	68.831	68.235
429.5	0	68.81	68.245
429.6	0	68.789	68.255
429.7	0	68.768	68.265
429.8	0	68.747	68.275
429.9	0	68.747	68.285
430	0	68.747	68.295
430.1	0	68.726	68.295
430.2	0	68.726	68.285
430.3	0	68.726	68.275
430.4	0	68.706	68.265
430.5	0	68.706	68.255
430.6	0	68.706	68.245
430.7	0	68.706	68.235
430.8	0	68.685	68.225
430.9	0	68.664	68.215
431	0	68.643	68.205
431.1	0	68.622	68.174
431.2	0	68.601	68.125
431.3	0	68.559	68.075
431.4	0	68.538	68.024
431.5	0	68.517	67.975
431.6	0	68.496	67.924
431.7	0	68.496	67.875
431.8	0	68.496	67.825

431.9	0	68.433	67.774
432	0	68.412	67.725
432.1	0	68.391	67.68
432.2	0	68.37	67.64
432.3	0	68.328	67.6
432.4	0	68.287	67.56
432.5	0	68.245	67.52
432.6	0	68.182	67.48
432.7	0	68.182	67.44
432.8	0	68.077	67.4
432.9	0	68.035	67.36
433	0	67.993	67.32
433.1	0	67.993	67.31
433.2	0	67.972	67.33
433.3	0	67.91	67.35
433.4	0	67.889	67.37
433.5	0	67.889	67.39
433.6	0	67.889	67.41
433.7	0	67.889	67.43
433.8	0	67.889	67.45
433.9	0	67.91	67.47
434	0	67.91	67.49
434.1	0	67.91	67.505
434.2	0	67.951	67.515
434.3	0	67.972	67.525
434.4	0	67.972	67.535
434.5	0	67.993	67.545
434.6	0	68.014	67.555
434.7	0	68.056	67.565
434.8	0	68.077	67.575
434.9	0	68.077	67.585
435	0	68.098	67.595
435.1	0	68.098	67.6
435.2	0	68.119	67.6
435.3	0	68.119	67.6
435.4	0	68.119	67.6
435.5	0	68.119	67.6
435.6	0	68.077	67.6
435.7	0	68.077	67.6
435.8	0	68.056	67.6
435.9	0	68.056	67.6
436	0	68.035	67.6
436.1	0	67.972	67.58
436.2	0	67.972	67.54
436.3	0	67.951	67.5



436.4	0	67.91	67.46
436.5	0	67.847	67.42
436.6	0	67.784	67.38
436.7	0	67.7	67.34
436.8	0	67.637	67.3
436.9	0	67.595	67.26
437	0	67.553	67.22
437.1	0	67.512	67.19
437.2	0	67.47	67.17
437.3	0	67.449	67.15
437.4	0	67.407	67.13
437.5	0	67.386	67.11
437.6	0	67.344	67.09
437.7	0	67.323	67.07
437.8	0	67.302	67.05
437.9	0	67.302	67.03
438	0	67.281	67.01
438.1	0	67.281	66.964
438.2	0	67.281	66.895
438.3	0	67.281	66.825
438.4	0	67.281	66.754
438.5	0	67.281	66.685
438.6	0	67.26	66.614
438.7	0	67.26	66.545
438.8	0	67.239	66.475
438.9	0	67.218	66.404
439	0	67.197	66.335
439.1	0	67.155	66.315
439.2	0	67.134	66.345
439.3	0	67.134	66.375
439.4	0	67.114	66.405
439.5	0	67.114	66.435
439.6	0	67.114	66.465
439.7	0	67.134	66.495
439.8	0	67.134	66.525
439.9	0	67.155	66.555
440	0	67.155	66.585
440.1	0	67.176	66.58
440.2	0	67.176	66.54
440.3	0	67.176	66.5
440.4	0	67.155	66.46
440.5	0	67.114	66.42
440.6	0	67.093	66.38
440.7	0	67.072	66.34
440.8	0	67.051	66.3

440.9	0	67.03	66.26
441	0	67.009	66.22
441.1	0	67.009	66.21
441.2	0	66.988	66.23
441.3	0	66.967	66.25
441.4	0	66.946	66.27
441.5	0	66.925	66.29
441.6	0	66.883	66.31
441.7	0	66.841	66.33
441.8	0	66.799	66.35
441.9	0	66.799	66.37
442	0	66.653	66.39
442.1	0	66.611	66.375
442.2	0	66.548	66.325
442.3	0	66.485	66.275
442.4	0	66.485	66.225
442.5	0	66.359	66.175
442.6	0	66.297	66.125
442.7	0	66.255	66.075
442.8	0	66.255	66.025
442.9	0	66.213	65.975
443	0	66.15	65.925
443.1	0	66.108	65.91
443.2	0	66.108	65.93
443.3	0	66.087	65.95
443.4	0	66.066	65.97
443.5	0	66.087	65.99
443.6	0	66.087	66.01
443.7	0	66.087	66.03
443.8	0	66.108	66.05
443.9	0	66.129	66.07
444	0	66.15	66.09
444.1	0	66.15	66.069
444.2	0	66.15	66.01
444.3	0	66.129	65.95
444.4	0	66.024	65.889
444.5	0	65.961	65.83
444.6	0	65.961	65.769
444.7	0	65.878	65.71
444.8	0	65.878	65.65
444.9	0	65.605	65.589
445	0	65.605	65.53
445.1	0	65.501	65.332
445.2	0	65.375	65.005
445.3	0	65.207	64.675

445.4	0	64.935	64.342
445.5	0	64.6	64.015
445.6	0	64.265	63.682
445.7	0	63.951	63.355
445.8	0	63.385	63.025
445.9	0	63.385	62.692
446	0	63.217	62.365
446.1	0	63.071	62.2
446.2	0	62.903	62.2
446.3	0	62.673	62.2
446.4	0	62.442	62.2
446.5	0	62.233	62.2
446.6	0	62.107	62.2
446.7	0	61.982	62.2
446.8	0	61.898	62.2
446.9	0	61.793	62.2
447	0	61.751	62.2
447.1	0	61.688	62.159
447.2	0	61.667	62.08
447.3	0	61.667	62
447.4	0	61.667	61.919
447.5	0	61.667	61.84
447.6	0	61.667	61.759
447.7	0	61.667	61.68
447.8	0	61.667	61.6
447.9	0	61.646	61.519
448	0	61.646	61.44
448.1	0	61.646	61.385
448.2	0	61.646	61.355
448.3	0	61.646	61.325
448.4	0	61.646	61.295
448.5	0	61.646	61.265
448.6	0	61.646	61.235
448.7	0	61.646	61.205
448.8	0	61.646	61.175
448.9	0	61.646	61.145
449	0	61.646	61.115
449.1	0	61.667	61.115
449.2	0	61.688	61.145
449.3	0	61.73	61.175
449.4	0	61.751	61.205
449.5	0	61.772	61.235
449.6	0	61.814	61.265
449.7	0	61.835	61.295
449.8	0	61.856	61.325

449.9	0	61.898	61.355
450	0	61.919	61.385
450.1	0	61.919	61.385
450.2	0	61.919	61.355
450.3	0	61.919	61.325
450.4	0	61.919	61.295
450.5	0	61.919	61.265
450.6	0	61.919	61.235
450.7	0	61.898	61.205
450.8	0	61.898	61.175
450.9	0	61.898	61.145
451	0	61.898	61.115
451.1	0	61.898	61.115
451.2	0	61.877	61.145
451.3	0	61.856	61.175
451.4	0	61.814	61.205
451.5	0	61.793	61.235
451.6	0	61.793	61.265
451.7	0	61.751	61.295
451.8	0	61.772	61.325
451.9	0	61.772	61.355
452	0	61.772	61.385
452.1	0	61.793	61.4
452.2	0	61.856	61.4
452.3	0	61.877	61.4
452.4	0	61.898	61.4
452.5	0	61.898	61.4
452.6	0	61.94	61.4
452.7	0	61.961	61.4
452.8	0	61.982	61.4
452.9	0	61.982	61.4
453	0	62.003	61.4
453.1	0	62.023	61.42
453.2	0	62.044	61.46
453.3	0	62.044	61.5
453.4	0	62.044	61.54
453.5	0	62.044	61.58
453.6	0	62.044	61.62
453.7	0	62.044	61.66
453.8	0	62.044	61.7
453.9	0	62.023	61.74
454	0	62.023	61.78
454.1	0	62.003	61.8
454.2	0	62.003	61.8
454.3	0	62.003	61.8

454.4	0	61.982	61.8
454.5	0	61.982	61.8
454.6	0	61.961	61.8
454.7	0	61.961	61.8
454.8	0	61.961	61.8
454.9	0	61.961	61.8
455	0	61.961	61.8
455.1	0	61.961	61.8
455.2	0	61.961	61.8
455.3	0	61.961	61.8
455.4	0	61.961	61.8
455.5	0	61.961	61.8
455.6	0	61.961	61.8
455.7	0	61.961	61.8
455.8	0	61.961	61.8
455.9	0	61.961	61.8
456	0	61.982	61.8
456.1	0	61.982	61.8
456.2	0	61.982	61.8
456.3	0	61.982	61.8
456.4	0	61.982	61.8
456.5	0	61.982	61.8
456.6	0	61.982	61.8
456.7	0	61.982	61.8
456.8	0	62.003	61.8
456.9	0	62.003	61.8
457	0	62.003	61.8
457.1	0	62.003	61.82
457.2	0	62.023	61.86
457.3	0	62.023	61.9
457.4	0	62.023	61.94
457.5	0	62.044	61.98
457.6	0	62.044	62.02
457.7	0	62.044	62.06
457.8	0	62.044	62.1
457.9	0	62.065	62.14
458	0	62.065	62.18
458.1	0	62.086	62.18
458.2	0	62.128	62.14
458.3	0	62.149	62.1
458.4	0	62.191	62.06
458.5	0	62.212	62.02
458.6	0	62.233	61.98
458.7	0	62.275	61.94
458.8	0	62.296	61.9

458.9	0	62.317	61.86
459	0	62.338	61.82
459.1	0	62.359	61.82
459.2	0	62.38	61.86
459.3	0	62.421	61.9
459.4	0	62.442	61.94
459.5	0	62.463	61.98
459.6	0	62.484	62.02
459.7	0	62.505	62.06
459.8	0	62.526	62.1
459.9	0	62.526	62.14
460	0	62.547	62.18
460.1	0	62.547	62.22
460.2	0	62.547	62.26
460.3	0	62.547	62.3
460.4	0	62.547	62.34
460.5	0	62.568	62.38
460.6	0	62.568	62.42
460.7	0	62.568	62.46
460.8	0	62.568	62.5
460.9	0	62.589	62.54
461	0	62.589	62.58
461.1	0	62.61	62.58
461.2	0	62.61	62.54
461.3	0	62.61	62.5
461.4	0	62.631	62.46
461.5	0	62.631	62.42
461.6	0	62.631	62.38
461.7	0	62.631	62.34
461.8	0	62.652	62.3
461.9	0	62.652	62.26
462	0	62.652	62.22
462.1	0	62.652	62.22
462.2	0	62.652	62.26
462.3	0	62.652	62.3
462.4	0	62.652	62.34
462.5	0	62.652	62.38
462.6	0	62.652	62.42
462.7	0	62.673	62.46
462.8	0	62.694	62.5
462.9	0	62.694	62.54
463	0	62.694	62.58
463.1	0	62.694	62.58
463.2	0	62.715	62.54
463.3	0	62.715	62.5

463.4	0	62.715	62.46
463.5	0	62.715	62.42
463.6	0	62.715	62.38
463.7	0	62.694	62.34
463.8	0	62.673	62.3
463.9	0	62.673	62.26
464	0	62.673	62.22
464.1	0	62.673	62.22
464.2	0	62.652	62.26
464.3	0	62.673	62.3
464.4	0	62.673	62.34
464.5	0	62.673	62.38
464.6	0	62.673	62.42
464.7	0	62.673	62.46
464.8	0	62.673	62.5
464.9	0	62.694	62.54
465	0	62.715	62.58
465.1	0	62.736	62.6
465.2	0	62.778	62.6
465.3	0	62.799	62.6
465.4	0	62.84	62.6
465.5	0	62.861	62.6
465.6	0	62.903	62.6
465.7	0	62.924	62.6
465.8	0	62.966	62.6
465.9	0	62.987	62.6
466	0	63.029	62.6
466.1	0	63.05	62.62
466.2	0	63.071	62.66
466.3	0	63.092	62.7
466.4	0	63.113	62.74
466.5	0	63.134	62.78
466.6	0	63.134	62.82
466.7	0	63.134	62.86
466.8	0	63.134	62.9
466.9	0	63.134	62.94
467	0	63.134	62.98
467.1	0	63.134	62.98
467.2	0	63.113	62.94
467.3	0	63.092	62.9
467.4	0	63.071	62.86
467.5	0	63.05	62.82
467.6	0	63.029	62.78
467.7	0	62.987	62.74
467.8	0	62.945	62.7

467.9	0	62.903	62.66
468	0	62.819	62.62
468.1	0	62.736	62.58
468.2	0	62.652	62.54
468.3	0	62.568	62.5
468.4	0	62.463	62.46
468.5	0	62.38	62.42
468.6	0	62.275	62.38
468.7	0	62.191	62.34
468.8	0	62.086	62.3
468.9	0	62.003	62.26
469	0	61.919	62.22
469.1	0	61.814	62.144
469.2	0	61.73	62.035
469.3	0	61.625	61.925
469.4	0	61.542	61.814
469.5	0	61.437	61.705
469.6	0	61.353	61.594
469.7	0	61.269	61.485
469.8	0	61.165	61.375
469.9	0	61.081	61.264
470	0	60.976	61.155
470.1	0	60.892	61.018
470.2	0	60.809	60.86
470.3	0	60.704	60.7
470.4	0	60.704	60.538
470.5	0	60.515	60.38
470.6	0	60.432	60.218
470.7	0	60.432	60.06
470.8	0	60.432	59.9
470.9	0	60.243	59.738
471	0	60.034	59.58
471.1	0	59.908	59.464
471.2	0	59.761	59.395
471.3	0	59.761	59.325
471.4	0	59.468	59.254
471.5	0	59.342	59.185
471.6	0	59.196	59.114
471.7	0	59.196	59.045
471.8	0	59.07	58.975
471.9	0	58.881	58.904
472	0	58.777	58.835
472.1	0	58.777	58.698
472.2	0	58.693	58.5
472.3	0	58.588	58.3



472.4	0	58.379	58.098
472.5	0	58.253	57.9
472.6	0	58.253	57.698
472.7	0	58.106	57.5
472.8	0	57.813	57.3
472.9	0	57.646	57.098
473	0	57.646	56.9
473.1	0	57.478	56.744
473.2	0	57.29	56.628
473.3	0	56.933	56.525
473.4	0	56.933	56.414
473.5	0	56.745	56.305
473.6	0	56.556	56.194
473.7	0	56.389	56.085
473.8	0	56.221	55.975
473.9	0	56.054	55.864
474	0	55.886	55.755
474.1	0	55.739	55.618
474.2	0	55.404	55.46
474.3	0	55.404	55.3
474.4	0	55.258	55.138
474.5	0	55.09	54.98
474.6	0	54.923	54.818
474.7	0	54.755	54.66
474.8	0	54.587	54.5
474.9	0	54.42	54.338
475	0	54.252	54.18
475.1	0	54.085	53.967
475.2	0	53.917	53.71
475.3	0	53.749	53.45
475.4	0	53.582	53.187
475.5	0	53.393	52.93
475.6	0	53.184	52.667
475.7	0	52.995	52.41
475.8	0	52.786	52.15
475.9	0	52.576	51.887
476	0	52.367	51.63
476.1	0	52.137	51.383
476.2	0	51.927	51.155
476.3	0	51.718	50.925
476.4	0	51.508	50.693
476.5	0	51.299	50.465
476.6	0	51.089	50.233
476.7	0	50.88	50.005
476.8	0	50.67	49.775

476.9	0	50.461	49.543
477	0	50.251	49.315
477.1	0	50.042	49.18
477.2	0	49.832	49.14
477.3	0	49.602	49.1
477.4	0	49.414	49.06
477.5	0	49.246	49.02
477.6	0	49.12	48.98
477.7	0	49.016	48.94
477.8	0	48.932	48.9
477.9	0	48.848	48.86
478	0	48.764	48.82
478.1	0	48.68	48.739
478.2	0	48.618	48.62
478.3	0	48.534	48.5
478.4	0	48.45	48.379
478.5	0	48.387	48.26
478.6	0	48.303	48.139
478.7	0	48.22	48.02
478.8	0	48.136	47.9
478.9	0	48.031	47.779
479	0	47.926	47.66
479.1	0	47.801	47.462
479.2	0	47.696	47.195
479.3	0	47.57	46.925
479.4	0	47.445	46.652
479.5	0	47.445	46.385
479.6	0	47.172	46.112
479.7	0	47.005	45.845
479.8	0	46.837	45.575
479.9	0	46.837	45.302
480	0	46.481	45.035
480.1	0	46.292	44.727
480.2	0	46.062	44.39
480.3	0	45.811	44.05
480.4	0	45.811	43.707
480.5	0	45.224	43.37
480.6	0	44.847	43.027
480.7	0	44.449	42.69
480.8	0	44.449	42.35
480.9	0	44.03	42.007
481	0	43.213	41.67
481.1	0	42.773	41.281
481.2	0	42.773	40.855
481.3	0	42.313	40.425

481.4	0	41.81	39.991
481.5	0	40.679	39.565
481.6	0	40.05	39.131
481.7	0	40.05	38.705
481.8	0	39.422	38.275
481.9	0	38.123	37.841
482	0	37.537	37.415
482.1	0	37.537	37.067
482.2	0	36.929	36.81
482.3	0	36.343	36.55
482.4	0	35.212	36.287
482.5	0	35.212	36.03
482.6	0	34.751	35.767
482.7	0	34.395	35.51
482.8	0	34.08	35.25
482.9	0	33.62	34.987
483	0	33.62	34.73
483.1	0	33.452	34.518
483.2	0	33.305	34.36
483.3	0	33.096	34.2
483.4	0	33.096	34.038
483.5	0	33.012	33.88
483.6	0	32.907	33.718
483.7	0	32.907	33.56
483.8	0	32.74	33.4
483.9	0	32.656	33.238
484	0	32.572	33.08
484.1	0	32.468	32.806
484.2	0	32.363	32.43
484.3	0	32.216	32.05
484.4	0	31.986	31.666
484.5	0	31.651	31.29
484.6	0	31.253	30.906
484.7	0	30.792	30.53
484.8	0	30.289	30.15
484.9	0	29.786	29.766
485	0	29.242	29.39
485.1	0	28.739	28.848
485.2	0	28.278	28.165
485.3	0	27.838	27.475
485.4	0	27.398	26.778
485.5	0	26.959	26.095
485.6	0	26.456	25.398
485.7	0	25.869	24.715
485.8	0	25.241	24.025

485.9	0	24.571	23.328
486	0	23.879	22.645
486.1	0	23.167	22.065
486.2	0	22.455	21.61
486.3	0	21.785	21.15
486.4	0	21.114	20.685
486.5	0	20.444	20.23
486.6	0	19.795	19.765
486.7	0	19.145	19.31
486.8	0	18.726	18.85
486.9	0	18.517	18.385
487	0	18.349	17.93
487.1	0	18.224	17.68
487.2	0	18.077	17.64
487.3	0	17.951	17.6
487.4	0	17.826	17.56
487.5	0	17.721	17.52
487.6	0	17.595	17.48
487.7	0	17.491	17.44
487.8	0	17.365	17.4
487.9	0	17.239	17.36
488	0	17.009	17.32
488.1	0	16.611	17.132
488.2	0	16.192	16.805
488.3	0	15.773	16.475
488.4	0	15.375	16.142
488.5	0	14.977	15.815
488.6	0	14.977	15.482
488.7	0	14.265	15.155
488.8	0	13.951	14.825
488.9	0	13.636	14.492
489	0	13.322	14.165
489.1	0	13.029	13.796
489.2	0	12.715	13.4
489.3	0	12.401	13
489.4	0	12.086	12.596
489.5	0	12.086	12.2
489.6	0	11.458	11.796
489.7	0	11.144	11.4
489.8	0	10.829	11
489.9	0	10.452	10.596
490	0	10.452	10.2
490.1	0	9.552	9.796
490.2	0	9.091	9.4
490.3	0	8.63	9

490.4	0	8.63	8.596
490.5	0	8.169	8.2
490.6	0	7.143	7.796
490.7	0	6.619	7.4
490.8	0	6.619	7
490.9	0	6.075	6.596
491	0	5.53	6.2
491.1	0	4.399	5.796
491.2	0	3.812	5.4
491.3	0	3.812	5
491.4	0	3.205	4.596
491.5	0	1.99	4.2
491.6	0	1.445	3.796
491.7	0	1.445	3.4
491.8	0	0.964	3
491.9	0	0.545	2.596
492	0	0.189	2.2
492.1	0	0.189	1.898
492.2	0	0.168	1.7
492.3	0	0.126	1.5
492.4	0	0.063	1.298
492.5	0	0.084	1.1
492.6	0	0.084	0.898
492.7	0	0.042	0.7
492.8	0	0.042	0.5
492.9	0	0.042	0.298
493	0	0.042	0.1
493.1	0	0.021	0
493.2	0	0.042	0
493.3	0	0.042	0
493.4	0	0	0
493.5	0	0.021	0
493.6	0	0	0
493.7	0	0	0
493.8	0	0	0
493.9	0	0	0
494	0	0	0
494.1	0	0.021	0
494.2	0	0	0
494.3	0	0	0
494.4	0	0	0
494.5	0	0	0
494.6	0	0	0
494.7	0	0	0
494.8	0	0	0

494.9	0	0	0
495	0	0	0
495.1	0	0	0
495.2	0	0	0
495.3	0	0	0
495.4	0	0	0
495.5	0	0	0
495.6	0	0	0
495.7	0	0	0
495.8	0	0	0
495.9	0	0	0
496	0	0	0
496.1	0	0	0
496.2	0	0	0
496.3	0	0	0
496.4	0	0	0
496.5	0	0	0
496.6	0	0	0
496.7	0	0	0
496.8	0	0	0
496.9	0	0	0
497	0	0	0
497.1	0	0	0
497.2	0	0	0
497.3	0	0	0
497.4	0	0	0
497.5	0	0	0
497.6	0	0	0
497.7	0	0	0
497.8	0	0	0
497.9	0	0	0
498	0	0	0
498.1	0	0	0
498.2	0	0	0
498.3	0	0	0
498.4	0	0	0
498.5	0	0	0
498.6	0	0	0
498.7	0	0	0
498.8	0	0	0
498.9	0	0	0
499	0	0	0
499.1	0	0	0
499.2	0	0	0
499.3	0	0	0

499.4	0	0	0
499.5	0	0	0
499.6	0	0	0
499.7	0	0	0
499.8	0	0	0
499.9	0	0	0
500	0	0	0
500.1	0	0	0.01
500.2	0	0	0.03
500.3	0	0	0.05
500.4	0	0	0.07
500.5	0	0	0.09
500.6	0	0.021	0.11
500.7	0	0.021	0.13
500.8	0	0.042	0.15
500.9	0	0.042	0.17
501	0	0.126	0.19
501.1	0	0.293	0.414
501.2	0	0.691	0.83
501.3	0	0.691	1.25
501.4	0	0.922	1.674
501.5	0	1.173	2.09
501.6	0	1.445	2.514
501.7	0	2.032	2.93
501.8	0	2.032	3.35
501.9	0	2.325	3.774
502	0	2.639	4.19
502.1	0	3.268	4.691
502.2	0	3.268	5.255
502.3	0	3.624	5.825
502.4	0	4.001	6.401
502.5	0	4.42	6.965
502.6	0	4.881	7.541
502.7	0	5.362	8.105
502.8	0	5.865	8.675
502.9	0	6.41	9.251
503	0	6.954	9.815
503.1	0	7.52	10.381
503.2	0	8.085	10.925
503.3	0	8.651	11.475
503.4	0	9.196	12.031
503.5	0	9.74	12.575
503.6	0	10.306	13.131
503.7	0	10.829	13.675
503.8	0	11.353	14.225

503.9	0	11.856	14.781
504	0	12.359	15.325
504.1	0	12.882	15.865
504.2	0	13.427	16.38
504.3	0	13.972	16.9
504.4	0	14.537	17.425
504.5	0	15.103	17.94
504.6	0	15.668	18.465
504.7	0	16.234	18.98
504.8	0	16.799	19.5
504.9	0	17.386	20.025
505	0	17.972	20.54
505.1	0	18.559	21.019
505.2	0	19.145	21.445
505.3	0	19.732	21.875
505.4	0	20.339	22.309
505.5	0	20.926	22.735
505.6	0	21.512	23.169
505.7	0	22.12	23.595
505.8	0	22.706	24.025
505.9	0	23.293	24.459
506	0	23.879	24.885
506.1	0	24.466	25.233
506.2	0	25.031	25.49
506.3	0	25.555	25.75
506.4	0	26.079	26.013
506.5	0	26.623	26.27
506.6	0	27.147	26.533
506.7	0	27.692	26.79
506.8	0	28.194	27.05
506.9	0	28.571	27.313
507	0	28.844	27.57
507.1	0	29.011	27.726
507.2	0	29.116	27.775
507.3	0	29.158	27.825
507.4	0	29.158	27.876
507.5	0	29.032	27.925
507.6	0	28.823	27.976
507.7	0	28.613	28.025
507.8	0	28.362	28.075
507.9	0	28.362	28.126
508	0	28.048	28.175
508.1	0	27.943	28.129
508.2	0	27.859	27.99
508.3	0	27.859	27.85



508.4	0	27.775	27.709
508.5	0	27.629	27.57
508.6	0	27.545	27.429
508.7	0	27.44	27.29
508.8	0	27.44	27.15
508.9	0	27.105	27.009
509	0	26.896	26.87
509.1	0	26.665	26.698
509.2	0	26.665	26.5
509.3	0	26.435	26.3
509.4	0	25.848	26.098
509.5	0	25.513	25.9
509.6	0	25.513	25.698
509.7	0	25.513	25.5
509.8	0	24.696	25.3
509.9	0	23.9	25.098
510	0	23.586	24.9
510.1	0	23.586	24.678
510.2	0	23.293	24.44
510.3	0	23.062	24.2
510.4	0	22.581	23.958
510.5	0	22.581	23.72
510.6	0	22.246	23.478
510.7	0	21.91	23.24
510.8	0	21.554	23
510.9	0	20.779	22.758
511	0	20.779	22.52
511.1	0	20.36	22.13
511.2	0	19.941	21.605
511.3	0	18.999	21.075
511.4	0	18.999	20.54
511.5	0	18.538	20.015
511.6	0	18.077	19.48
511.7	0	17.574	18.955
511.8	0	16.548	18.425
511.9	0	16.548	17.89
512	0	15.941	17.365
512.1	0	15.333	16.804
512.2	0	14.705	16.23
512.3	0	14.16	15.65
512.4	0	13.636	15.064
512.5	0	13.113	14.49
512.6	0	12.589	13.904
512.7	0	12.086	13.33
512.8	0	11.584	12.75

512.9	0	11.081	12.164
513	0	10.536	11.59
513.1	0	9.95	11.076
513.2	0	9.321	10.64
513.3	0	8.672	10.2
513.4	0	8.023	9.756
513.5	0	7.394	9.32
513.6	0	7.038	8.876
513.7	0	6.871	8.44
513.8	0	6.787	8
513.9	0	6.745	7.556
514	0	6.703	7.12
514.1	0	6.661	6.931
514.2	0	6.64	6.99
514.3	0	6.598	7.05
514.4	0	6.556	7.111
514.5	0	6.535	7.17
514.6	0	6.535	7.231
514.7	0	6.556	7.29
514.8	0	6.577	7.35
514.9	0	6.64	7.411
515	0	6.745	7.47
515.1	0	6.933	7.684
515.2	0	7.185	8.04
515.3	0	7.478	8.4
515.4	0	7.834	8.764
515.5	0	8.19	9.12
515.6	0	8.567	9.484
515.7	0	8.986	9.84
515.8	0	9.405	10.2
515.9	0	9.866	10.564
516	0	10.327	10.92
516.1	0	10.788	11.319
516.2	0	11.29	11.745
516.3	0	11.793	12.175
516.4	0	12.338	12.609
516.5	0	12.903	13.035
516.6	0	13.49	13.469
516.7	0	14.076	13.895
516.8	0	14.642	14.325
516.9	0	15.228	14.759
517	0	15.836	15.185
517.1	0	15.836	15.629
517.2	0	17.03	16.075
517.3	0	17.637	16.525

517.4	0	18.245	16.979
517.5	0	18.245	17.425
517.6	0	19.481	17.879
517.7	0	20.088	18.325
517.8	0	20.695	18.775
517.9	0	21.303	19.229
518	0	21.303	19.675
518.1	0	22.518	20.119
518.2	0	23.104	20.545
518.3	0	23.691	20.975
518.4	0	23.691	21.409
518.5	0	24.277	21.835
518.6	0	25.283	22.269
518.7	0	25.471	22.695
518.8	0	25.597	23.125
518.9	0	25.597	23.559
519	0	25.806	23.985
519.1	0	26.435	24.348
519.2	0	26.665	24.635
519.3	0	26.665	24.925
519.4	0	26.938	25.218
519.5	0	27.503	25.505
519.6	0	27.775	25.798
519.7	0	27.775	26.085
519.8	0	28.069	26.375
519.9	0	28.32	26.668
520	0	28.739	26.955
520.1	0	28.739	27.171
520.2	0	28.886	27.31
520.3	0	28.99	27.45
520.4	0	29.074	27.591
520.5	0	29.2	27.73
520.6	0	29.2	27.871
520.7	0	29.263	28.01
520.8	0	29.305	28.15
520.9	0	29.409	28.291
521	0	29.409	28.43
521.1	0	29.388	28.485
521.2	0	29.346	28.455
521.3	0	29.326	28.425
521.4	0	29.263	28.395
521.5	0	29.221	28.365
521.6	0	29.158	28.335
521.7	0	29.116	28.305
521.8	0	29.053	28.275

521.9	0	28.969	28.245
522	0	28.886	28.215
522.1	0	28.823	28.067
522.2	0	28.739	27.81
522.3	0	28.613	27.55
522.4	0	28.236	27.287
522.5	0	27.629	27.03
522.6	0	26.917	26.767
522.7	0	26.917	26.51
522.8	0	25.513	26.25
522.9	0	24.948	25.987
523	0	24.571	25.73
523.1	0	24.235	25.401
523.2	0	23.879	25.015
523.3	0	23.544	24.625
523.4	0	23.314	24.231
523.5	0	23.146	23.845
523.6	0	23	23.451
523.7	0	22.853	23.065
523.8	0	22.727	22.675
523.9	0	22.581	22.281
524	0	22.434	21.895
524.1	0	22.287	21.476
524.2	0	22.12	21.04
524.3	0	21.952	20.6
524.4	0	21.764	20.156
524.5	0	21.575	19.72
524.6	0	21.366	19.276
524.7	0	21.031	18.84
524.8	0	20.57	18.4
524.9	0	20.025	17.956
525	0	19.439	17.52
525.1	0	18.789	17.035
525.2	0	18.161	16.52
525.3	0	17.532	16
525.4	0	16.862	15.475
525.5	0	16.129	14.96
525.6	0	15.354	14.435
525.7	0	14.663	13.92
525.8	0	14.202	13.4
525.9	0	13.867	12.849
526	0	13.532	12.36
526.1	0	13.196	11.865
526.2	0	12.819	11.41
526.3	0	12.38	10.95

526.4	0	11.919	10.485
526.5	0	11.458	10.03
526.6	0	11.458	9.565
526.7	0	10.494	9.11
526.8	0	10.013	8.65
526.9	0	9.552	8.185
527	0	9.07	7.73
527.1	0	9.07	7.413
527.2	0	8.085	7.245
527.3	0	7.604	7.075
527.4	0	7.101	6.903
527.5	0	7.101	6.735
527.6	0	6.242	6.563
527.7	0	5.907	6.395
527.8	0	5.593	6.225
527.9	0	5.593	6.053
528	0	5.32	5.885
528.1	0	4.839	5.627
528.2	0	4.608	5.29
528.3	0	4.357	4.95
528.4	0	4.357	4.607
528.5	0	4.106	4.27
528.6	0	3.603	3.927
528.7	0	3.351	3.59
528.8	0	3.351	3.25
528.9	0	3.079	2.907
529	0	2.597	2.57
529.1	0	2.367	2.339
529.2	0	2.367	2.22
529.3	0	2.137	2.1
529.4	0	1.906	1.979
529.5	0	1.676	1.86
529.6	0	1.634	1.739
529.7	0	1.634	1.62
529.8	0	1.613	1.5
529.9	0	1.592	1.379
530	0	1.571	1.26
530.1	0	1.571	1.236
530.2	0	1.571	1.305
530.3	0	1.613	1.375
530.4	0	1.697	1.446
530.5	0	1.697	1.515
530.6	0	1.76	1.586
530.7	0	1.843	1.655
530.8	0	2.011	1.725

530.9	0	2.199	1.796
531	0	2.43	1.865
531.1	0	2.702	2.145
531.2	0	2.974	2.62
531.3	0	3.268	3.1
531.4	0	3.603	3.585
531.5	0	3.959	4.06
531.6	0	4.336	4.545
531.7	0	4.755	5.02
531.8	0	5.216	5.5
531.9	0	5.76	5.985
532	0	6.326	6.46
532.1	0	6.933	6.96
532.2	0	7.541	7.465
532.3	0	8.148	7.975
532.4	0	8.756	8.49
532.5	0	9.384	8.995
532.6	0	10.013	9.51
532.7	0	10.62	10.015
532.8	0	11.227	10.525
532.9	0	11.835	11.04
533	0	12.442	11.545
533.1	0	13.05	12.055
533.2	0	13.615	12.55
533.3	0	14.16	13.05
533.4	0	14.726	13.555
533.5	0	15.291	14.05
533.6	0	15.878	14.555
533.7	0	16.422	15.05
533.8	0	16.988	15.55
533.9	0	17.532	16.055
534	0	18.056	16.55
534.1	0	18.517	17.05
534.2	0	18.936	17.535
534.3	0	19.313	18.025
534.4	0	19.669	18.52
534.5	0	20.025	19.005
534.6	0	20.381	19.5
534.7	0	20.758	19.985
534.8	0	21.114	20.475
534.9	0	21.45	20.97
535	0	21.785	21.455
535.1	0	22.141	21.914
535.2	0	22.455	22.33
535.3	0	22.79	22.75

535.4	0	23.125	23.174
535.5	0	23.439	23.59
535.6	0	23.439	24.014
535.7	0	23.439	24.43
535.8	0	24.424	24.85
535.9	0	24.738	25.274
536	0	25.052	25.69
536.1	0	25.346	25.992
536.2	0	25.346	26.17
536.3	0	25.827	26.35
536.4	0	26.037	26.532
536.5	0	26.246	26.71
536.6	0	26.246	26.892
536.7	0	26.686	27.07
536.8	0	26.896	27.25
536.9	0	27.084	27.432
537	0	27.21	27.61
537.1	0	27.21	27.715
537.2	0	27.336	27.745
537.3	0	27.336	27.775
537.4	0	27.336	27.805
537.5	0	27.336	27.835
537.6	0	27.315	27.865
537.7	0	27.273	27.895
537.8	0	27.252	27.925
537.9	0	27.21	27.955
538	0	27.21	27.985
538.1	0	27.126	27.954
538.2	0	26.979	27.865
538.3	0	26.896	27.775
538.4	0	26.896	27.684
538.5	0	26.833	27.595
538.6	0	26.749	27.504
538.7	0	26.581	27.415
538.8	0	26.581	27.325
538.9	0	26.498	27.234
539	0	26.414	27.145
539.1	0	26.204	26.962
539.2	0	26.079	26.695
539.3	0	26.079	26.425
539.4	0	25.89	26.152
539.5	0	25.597	25.885
539.6	0	24.675	25.612
539.7	0	24.675	25.345
539.8	0	24.215	25.075

539.9	0	23.712	24.802
540	0	23.23	24.535
540.1	0	22.79	24.186
540.2	0	22.392	23.77
540.3	0	22.015	23.35
540.4	0	21.638	22.926
540.5	0	20.905	22.51
540.6	0	20.905	22.086
540.7	0	20.528	21.67
540.8	0	20.151	21.25
540.9	0	19.669	20.826
541	0	19.145	20.41
541.1	0	18.559	19.945
541.2	0	17.951	19.45
541.3	0	17.344	18.95
541.4	0	16.736	18.445
541.5	0	16.087	17.95
541.6	0	15.396	17.445
541.7	0	14.684	16.95
541.8	0	14.034	16.45
541.9	0	13.448	15.945
542	0	12.861	15.45
542.1	0	12.275	14.899
542.2	0	11.667	14.315
542.3	0	11.039	13.725
542.4	0	10.452	13.129
542.5	0	9.887	12.545
542.6	0	9.3	11.949
542.7	0	8.693	11.365
542.8	0	8.106	10.775
542.9	0	7.499	10.179
543	0	6.933	9.595
543.1	0	6.347	9.081
543.2	0	5.781	8.655
543.3	0	5.237	8.225
543.4	0	4.713	7.791
543.5	0	4.252	7.365
543.6	0	3.812	6.931
543.7	0	3.351	6.505
543.8	0	2.995	6.075
543.9	0	2.744	5.641
544	0	2.535	5.215
544.1	0	2.346	4.893
544.2	0	2.199	4.685
544.3	0	2.074	4.475



544.4	0	1.969	4.263
544.5	0	1.885	4.055
544.6	0	1.822	3.843
544.7	0	1.801	3.635
544.8	0	1.801	3.425
544.9	0	1.78	3.213
545	0	1.78	3.005
545.1	0	1.78	2.875
545.2	0	1.801	2.825
545.3	0	1.801	2.775
545.4	0	1.885	2.725
545.5	0	1.948	2.675
545.6	0	2.032	2.625
545.7	0	2.032	2.575
545.8	0	2.367	2.525
545.9	0	2.597	2.475
546	0	2.891	2.425
546.1	0	3.184	2.706
546.2	0	3.184	3.3
546.3	0	3.875	3.9
546.4	0	4.273	4.506
546.5	0	4.692	5.1
546.6	0	4.692	5.706
546.7	0	5.174	6.3
546.8	0	6.305	6.9
546.9	0	6.912	7.506
547	0	7.52	8.1
547.1	0	7.52	8.66
547.2	0	8.127	9.165
547.3	0	9.363	9.675
547.4	0	9.971	10.19
547.5	0	9.971	10.695
547.6	0	10.578	11.21
547.7	0	11.186	11.715
547.8	0	12.401	12.225
547.9	0	12.966	12.74
548	0	12.966	13.245
548.1	0	13.532	13.719
548.2	0	14.076	14.145
548.3	0	15.228	14.575
548.4	0	15.228	15.009
548.5	0	15.815	15.435
548.6	0	16.401	15.869
548.7	0	17.553	16.295
548.8	0	18.14	16.725

548.9	0	18.14	17.159
549	0	18.705	17.585
549.1	0	19.292	18.024
549.2	0	20.36	18.46
549.3	0	20.36	18.9
549.4	0	20.8	19.344
549.5	0	21.219	19.78
549.6	0	21.596	20.224
549.7	0	21.952	20.66
549.8	0	22.308	21.1
549.9	0	22.685	21.544
550	0	23.104	21.98
550.1	0	23.523	22.404
550.2	0	23.9	22.8
550.3	0	24.298	23.2
550.4	0	24.696	23.604
550.5	0	25.094	24
550.6	0	25.513	24.404
550.7	0	25.911	24.8
550.8	0	26.33	25.2
550.9	0	26.728	25.604
551	0	27.126	26
551.1	0	27.524	26.394
551.2	0	27.922	26.77
551.3	0	28.32	27.15
551.4	0	28.718	27.534
551.5	0	29.116	27.91
551.6	0	29.493	28.294
551.7	0	29.87	28.67
551.8	0	30.142	29.05
551.9	0	30.289	29.434
552	0	30.373	29.81
552.1	0	30.394	29.99
552.2	0	30.394	29.97
552.3	0	30.373	29.95
552.4	0	30.331	29.93
552.5	0	30.289	29.91
552.6	0	30.247	29.89
552.7	0	30.226	29.87
552.8	0	30.184	29.85
552.9	0	30.101	29.83
553	0	29.975	29.81
553.1	0	29.724	29.606
553.2	0	29.367	29.23
553.3	0	28.907	28.85

553.4	0	28.425	28.466
553.5	0	27.943	28.09
553.6	0	27.482	27.706
553.7	0	26.979	27.33
553.8	0	26.414	26.95
553.9	0	25.765	26.566
554	0	25.073	26.19
554.1	0	24.382	25.76
554.2	0	23.67	25.295
554.3	0	23	24.825
554.4	0	22.455	24.35
554.5	0	22.455	23.885
554.6	0	21.45	23.41
554.7	0	20.947	22.945
554.8	0	20.423	22.475
554.9	0	19.899	22
555	0	19.376	21.535
555.1	0	18.873	21.04
555.2	0	18.349	20.535
555.3	0	17.805	20.025
555.4	0	17.805	19.51
555.5	0	16.674	19.005
555.6	0	16.087	18.49
555.7	0	15.459	17.985
555.8	0	14.851	17.475
555.9	0	14.851	16.96
556	0	13.762	16.455
556.1	0	13.238	15.955
556.2	0	12.736	15.48
556.3	0	12.736	15
556.4	0	12.233	14.515
556.5	0	11.165	14.04
556.6	0	10.62	13.555
556.7	0	10.054	13.08
556.8	0	10.054	12.6
556.9	0	9.51	12.115
557	0	8.442	11.64
557.1	0	7.897	11.155
557.2	0	7.897	10.68
557.3	0	7.352	10.2
557.4	0	6.787	9.715
557.5	0	5.698	9.24
557.6	0	5.698	8.755
557.7	0	5.153	8.28
557.8	0	4.629	7.8

557.9	0	3.603	7.315
558	0	3.1	6.84
558.1	0	3.1	6.396
558.2	0	2.618	6
558.3	0	2.199	5.6
558.4	0	1.424	5.196
558.5	0	1.424	4.8
558.6	0	1.089	4.396
558.7	0	0.817	4
558.8	0	0.587	3.6
558.9	0	0.314	3.196
559	0	0.314	2.8
559.1	0	0.272	2.467
559.2	0	0.23	2.21
559.3	0	0.209	1.95
559.4	0	0.168	1.687
559.5	0	0.126	1.43
559.6	0	0.063	1.167
559.7	0	0.042	0.91
559.8	0	0.042	0.65
559.9	0	0.042	0.387
560	0	0.021	0.13
560.1	0	0.021	0
560.2	0	0	0
560.3	0	0	0
560.4	0	0	0
560.5	0	0	0
560.6	0	0	0
560.7	0	0.021	0
560.8	0	0	0
560.9	0	0	0
561	0	0	0
561.1	0	0	0
561.2	0	0	0
561.3	0	0	0
561.4	0	0	0
561.5	0	0	0
561.6	0	0	0
561.7	0	0	0
561.8	0	0	0
561.9	0	0	0
562	0	0	0
562.1	0	0	0
562.2	0	0	0
562.3	0	0	0

562.4	0	0	0
562.5	0	0	0
562.6	0	0	0
562.7	0	0	0
562.8	0	0	0
562.9	0	0	0
563	0	0	0
563.1	0	0	0
563.2	0	0	0
563.3	0	0	0
563.4	0	0	0
563.5	0	0	0
563.6	0	0	0
563.7	0	0	0
563.8	0	0	0
563.9	0	0	0
564	0	0	0
564.1	0	0	0
564.2	0	0	0
564.3	0	0	0
564.4	0	0	0
564.5	0	0	0
564.6	0	0	0
564.7	0	0	0
564.8	0	0	0
564.9	0	0	0
565	0	0	0
565.1	0	0	0
565.2	0	0	0
565.3	0	0	0
565.4	0	0	0
565.5	0	0	0
565.6	0	0	0
565.7	0	0	0
565.8	0	0	0
565.9	0	0	0
566	0	0	0
566.1	0	0	0
566.2	0	0	0
566.3	0	0	0
566.4	0	0	0
566.5	0	0	0
566.6	0	0	0
566.7	0	0	0
566.8	0	0	0

566.9	0	0	0
567	0	0	0
567.1	0	0	0.015
567.2	0	0.021	0.045
567.3	0	0.021	0.075
567.4	0	0.126	0.105
567.5	0	0.356	0.135
567.6	0	0.628	0.165
567.7	0	1.236	0.195
567.8	0	1.236	0.225
567.9	0	1.55	0.255
568	0	1.885	0.285
568.1	0	2.618	0.611
568.2	0	2.618	1.215
568.3	0	2.995	1.825
568.4	0	3.435	2.441
568.5	0	3.938	3.045
568.6	0	4.462	3.661
568.7	0	5.027	4.265
568.8	0	5.635	4.875
568.9	0	6.242	5.491
569	0	6.85	6.095
569.1	0	7.457	6.721
569.2	0	8.065	7.345
569.3	0	8.672	7.975
569.4	0	9.3	8.611
569.5	0	9.887	9.235
569.6	0	10.494	9.871
569.7	0	11.102	10.495
569.8	0	11.709	11.125
569.9	0	12.317	11.761
570	0	12.924	12.385
570.1	0	13.532	13.031
570.2	0	14.139	13.675
570.3	0	14.747	14.325
570.4	0	15.375	14.981
570.5	0	16.003	15.625
570.6	0	16.611	16.281
570.7	0	17.239	16.925
570.8	0	17.868	17.575
570.9	0	18.475	18.232
571	0	19.103	18.875
571.1	0	19.732	19.435
571.2	0	20.36	19.89
571.3	0	20.968	20.35

571.4	0	21.575	20.815
571.5	0	22.162	21.27
571.6	0	22.685	21.735
571.7	0	23.188	22.19
571.8	0	23.607	22.65
571.9	0	24.026	23.115
572	0	24.445	23.57
572.1	0	24.864	24.024
572.2	0	25.304	24.46
572.3	0	25.744	24.9
572.4	0	26.204	25.344
572.5	0	26.728	25.78
572.6	0	27.294	26.224
572.7	0	27.859	26.66
572.8	0	28.425	27.1
572.9	0	29.011	27.544
573	0	29.598	27.98
573.1	0	30.205	28.542
573.2	0	30.792	29.205
573.3	0	31.399	29.875
573.4	0	31.986	30.552
573.5	0	32.572	31.215
573.6	0	33.138	31.892
573.7	0	33.682	32.555
573.8	0	34.164	33.225
573.9	0	34.562	33.902
574	0	34.96	34.565
574.1	0	35.379	35.033
574.2	0	35.798	35.29
574.3	0	35.798	35.55
574.4	0	36.657	35.813
574.5	0	37.076	36.07
574.6	0	37.076	36.333
574.7	0	37.076	36.59
574.8	0	37.935	36.85
574.9	0	38.71	37.113
575	0	39.045	37.37
575.1	0	39.38	37.643
575.2	0	39.38	37.92
575.3	0	40.008	38.2
575.4	0	40.323	38.483
575.5	0	40.616	38.76
575.6	0	40.616	39.043
575.7	0	40.909	39.32
575.8	0	41.202	39.6

575.9	0	41.789	39.883
576	0	42.04	40.16
576.1	0	42.04	40.54
576.2	0	42.333	41.005
576.3	0	42.878	41.475
576.4	0	43.171	41.95
576.5	0	43.171	42.415
576.6	0	43.465	42.89
576.7	0	43.758	43.355
576.8	0	44.072	43.825
576.9	0	44.721	44.3
577	0	44.721	44.765
577.1	0	45.036	45.25
577.2	0	45.371	45.735
577.3	0	46.041	46.225
577.4	0	46.041	46.72
577.5	0	46.397	47.205
577.6	0	46.753	47.7
577.7	0	47.088	48.185
577.8	0	47.445	48.675
577.9	0	47.78	49.17
578	0	48.136	49.655
578.1	0	48.471	49.987
578.2	0	48.806	50.155
578.3	0	49.162	50.325
578.4	0	49.497	50.497
578.5	0	49.832	50.665
578.6	0	50.189	50.837
578.7	0	50.524	51.005
578.8	0	50.859	51.175
578.9	0	51.194	51.347
579	0	51.487	51.515
579.1	0	51.76	51.58
579.2	0	51.969	51.54
579.3	0	52.137	51.5
579.4	0	52.283	51.46
579.5	0	52.451	51.42
579.6	0	52.556	51.38
579.7	0	52.597	51.34
579.8	0	52.597	51.3
579.9	0	52.556	51.26
580	0	52.514	51.22
580.1	0	52.472	51.169
580.2	0	52.43	51.11
580.3	0	52.304	51.05



580.4	0	51.906	50.989
580.5	0	51.445	50.93
580.6	0	51.173	50.869
580.7	0	51.047	50.81
580.8	0	50.943	50.75
580.9	0	50.859	50.689
581	0	50.754	50.63
581.1	0	50.649	50.564
581.2	0	50.545	50.495
581.3	0	50.461	50.425
581.4	0	50.356	50.354
581.5	0	50.293	50.285
581.6	0	50.209	50.214
581.7	0	50.126	50.145
581.8	0	50.042	50.075
581.9	0	49.958	50.004
582	0	49.853	49.935
582.1	0	49.728	49.793
582.2	0	49.602	49.585
582.3	0	49.476	49.375
582.4	0	49.351	49.163
582.5	0	49.225	48.955
582.6	0	49.078	48.743
582.7	0	48.953	48.535
582.8	0	48.806	48.325
582.9	0	48.659	48.113
583	0	48.534	47.905
583.1	0	48.387	47.637
583.2	0	48.22	47.32
583.3	0	48.01	47
583.4	0	48.01	46.677
583.5	0	47.528	46.36
583.6	0	47.256	46.037
583.7	0	46.942	45.72
583.8	0	46.942	45.4
583.9	0	46.628	45.077
584	0	45.79	44.76
584.1	0	45.329	44.427
584.2	0	44.826	44.09
584.3	0	44.826	43.75
584.4	0	43.842	43.407
584.5	0	43.339	43.07
584.6	0	42.794	42.727
584.7	0	42.794	42.39
584.8	0	42.229	42.05

584.9	0	41.056	41.707
585	0	40.427	41.37
585.1	0	40.427	41.027
585.2	0	39.799	40.69
585.3	0	39.359	40.35
585.4	0	38.668	40.007
585.5	0	38.375	39.67
585.6	0	38.375	39.327
585.7	0	38.102	38.99
585.8	0	37.558	38.65
585.9	0	37.306	38.307
586	0	37.306	37.97
586.1	0	37.034	37.576
586.2	0	36.762	37.14
586.3	0	36.175	36.7
586.4	0	36.175	36.256
586.5	0	35.756	35.82
586.6	0	35.274	35.376
586.7	0	34.772	34.94
586.8	0	33.745	34.5
586.9	0	33.745	34.056
587	0	33.201	33.62
587.1	0	32.614	33.125
587.2	0	31.357	32.59
587.3	0	31.357	32.05
587.4	0	30.687	31.505
587.5	0	30.038	30.97
587.6	0	30.038	30.425
587.7	0	28.739	29.89
587.8	0	28.069	29.35
587.9	0	27.357	28.805
588	0	26.665	28.27
588.1	0	25.953	27.781
588.2	0	25.283	27.355
588.3	0	24.592	26.925
588.4	0	23.879	26.491
588.5	0	23.167	26.065
588.6	0	22.476	25.631
588.7	0	21.827	25.205
588.8	0	21.24	24.775
588.9	0	20.674	24.341
589	0	20.067	23.915
589.1	0	19.46	23.45
589.2	0	18.873	22.965
589.3	0	18.245	22.475

589.4	0	17.616	21.98
589.5	0	16.988	21.495
589.6	0	16.401	21
589.7	0	15.878	20.515
589.8	0	15.396	20.025
589.9	0	14.956	19.53
590	0	14.558	19.045
590.1	0	14.181	18.499
590.2	0	13.846	17.915
590.3	0	13.532	17.325
590.4	0	13.176	16.729
590.5	0	12.798	16.145
590.6	0	12.38	15.549
590.7	0	11.961	14.965
590.8	0	11.542	14.375
590.9	0	11.123	13.779
591	0	10.641	13.195
591.1	0	10.138	12.558
591.2	0	9.615	11.895
591.3	0	9.07	11.225
591.4	0	8.504	10.548
591.5	0	7.939	9.885
591.6	0	7.352	9.208
591.7	0	6.787	8.545
591.8	0	6.242	7.875
591.9	0	5.718	7.198
592	0	5.216	6.535
592.1	0	4.692	5.996
592.2	0	4.21	5.6
592.3	0	3.749	5.2
592.4	0	3.289	4.796
592.5	0	3.289	4.4
592.6	0	2.388	3.996
592.7	0	1.906	3.6
592.8	0	1.445	3.2
592.9	0	1.005	2.796
593	0	1.005	2.4
593.1	0	0.293	2.088
593.2	0	0.147	1.87
593.3	0	0.126	1.65
593.4	0	0.126	1.428
593.5	0	0.063	1.21
593.6	0	0.042	0.988
593.7	0	0.042	0.77
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651.9	0	0	0
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652.2	0	-0.021	0
652.3	0	-0.021	0



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652.5	0	0	0
652.6	0	0	0
652.7	0	0	0
652.8	0	0	0
652.9	0	0	0
653	0	-0.021	0
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653.2	0	0	0
653.3	0	0	0
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694.8	8	0.147	0
694.9	8	0.147	0
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695.2	8	0.168	0.03
695.3	8	0.168	0.05
695.4	8	0.168	0.07
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695.7	8	0.189	0.13
695.8	8	0.189	0.15
695.9	8	0.189	0.17
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696.2	8	0.209	0.275
696.3	8	0.251	0.325
696.4	8	0.251	0.375
696.5	8	0.44	0.425
696.6	8	0.607	0.475
696.7	8	0.775	0.525
696.8	8	0.964	0.575
696.9	8	0.964	0.625
697	8	1.257	0.675
697.1	8	1.362	0.72
697.2	8	1.445	0.76
697.3	8	1.445	0.8

697.4	8	1.508	0.84
697.5	8	1.529	0.88
697.6	8	1.529	0.92
697.7	8	1.55	0.96
697.8	8	1.55	1
697.9	8	1.571	1.04
698	8	1.571	1.08
698.1	8	1.592	1.131
698.2	8	1.592	1.19
698.3	8	1.613	1.25
698.4	8	1.718	1.311
698.5	8	1.801	1.37
698.6	8	1.801	1.431
698.7	8	1.885	1.49
698.8	8	1.99	1.55
698.9	8	2.304	1.611
699	8	2.304	1.67
699.1	8	2.514	1.919
699.2	8	2.765	2.345
699.3	8	3.456	2.775
699.4	8	3.917	3.209
699.5	8	3.917	3.635
699.6	8	4.42	4.069
699.7	8	4.943	4.495
699.8	8	6.116	4.925
699.9	8	6.116	5.359
700	8	6.724	5.785
700.1	8	7.331	6.403
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700.3	8	8.546	7.975
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700.7	8	11.625	11.135
700.8	8	11.625	11.925
700.9	8	12.233	12.723
701	8	12.861	13.505
701.1	8	13.469	14.237
701.2	8	14.097	14.89
701.3	8	14.705	15.55
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701.5	8	15.92	16.87
701.6	8	16.527	17.537
701.7	8	17.155	18.19
701.8	8	17.763	18.85

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702.1	8	19.606	20.765
702.2	8	20.214	21.28
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702.5	8	21.994	22.84
702.6	8	22.518	23.365
702.7	8	23	23.88
702.8	8	23.439	24.4
702.9	8	23.879	24.925
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703.1	8	24.654	25.664
703.2	8	25.031	25.595
703.3	8	25.408	25.525
703.4	8	25.765	25.454
703.5	8	26.1	25.385
703.6	8	26.351	25.314
703.7	8	26.581	25.245
703.8	8	26.812	25.175
703.9	8	27.042	25.104
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704.2	8	27.775	25.51
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705.7	8	31.148	30.935
705.8	8	31.378	31.325
705.9	8	31.609	31.719
706	8	31.609	32.105
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706.2	8	32.363	32.645
706.3	8	32.635	32.875

706.4	8	32.886	33.107
706.5	8	32.886	33.335
706.6	8	33.431	33.567
706.7	8	33.703	33.795
706.8	8	33.976	34.025
706.9	8	33.976	34.257
707	8	34.541	34.485
707.1	8	34.835	34.697
707.2	8	35.128	34.885
707.3	8	35.128	35.075
707.4	8	35.421	35.267
707.5	8	35.987	35.455
707.6	8	36.259	35.647
707.7	8	36.531	35.835
707.8	8	36.531	36.025
707.9	8	36.783	36.217
708	8	37.306	36.405
708.1	8	37.558	36.597
708.2	8	37.558	36.785
708.3	8	37.809	36.975
708.4	8	38.039	37.167
708.5	8	38.5	37.355
708.6	8	38.731	37.547
708.7	8	38.731	37.735
708.8	8	38.961	37.925
708.9	8	39.191	38.117
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709.1	8	39.631	38.477
709.2	8	39.841	38.625
709.3	8	40.071	38.775
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709.6	8	40.595	39.227
709.7	8	40.762	39.375
709.8	8	40.93	39.525
709.9	8	41.286	39.677
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710.1	8	41.433	40.017
710.2	8	41.579	40.245
710.3	8	41.705	40.475
710.4	8	41.831	40.707
710.5	8	41.956	40.935
710.6	8	42.061	41.167
710.7	8	42.166	41.395
710.8	8	42.292	41.625

710.9	8	42.396	41.857
711	8	42.522	42.085
711.1	8	42.648	42.282
711.2	8	42.794	42.44
711.3	8	42.899	42.6
711.4	8	43.025	42.762
711.5	8	43.15	42.92
711.6	8	43.255	43.082
711.7	8	43.381	43.24
711.8	8	43.486	43.4
711.9	8	43.611	43.562
712	8	43.695	43.72
712.1	8	43.779	43.82
712.2	8	43.863	43.86
712.3	8	43.946	43.9
712.4	8	44.009	43.94
712.5	8	44.093	43.98
712.6	8	44.177	44.02
712.7	8	44.261	44.06
712.8	8	44.323	44.1
712.9	8	44.365	44.14
713	8	44.365	44.18
713.1	8	44.365	44.159
713.2	8	44.323	44.08
713.3	8	44.302	44
713.4	8	44.24	43.919
713.5	8	44.198	43.84
713.6	8	44.135	43.759
713.7	8	44.051	43.68
713.8	8	43.946	43.6
713.9	8	43.8	43.519
714	8	43.632	43.44
714.1	8	43.486	43.359
714.2	8	43.339	43.28
714.3	8	43.234	43.2
714.4	8	43.15	43.119
714.5	8	43.046	43.04
714.6	8	42.983	42.959
714.7	8	42.899	42.88
714.8	8	42.815	42.8
714.9	8	42.731	42.719
715	8	42.648	42.64
715.1	8	42.543	42.483
715.2	8	42.438	42.255
715.3	8	42.313	42.025

715.4	8	42.166	41.793
715.5	8	41.998	41.565
715.6	8	41.81	41.333
715.7	8	41.81	41.105
715.8	8	41.391	40.875
715.9	8	41.181	40.643
716	8	40.993	40.415
716.1	8	40.825	40.244
716.2	8	40.825	40.135
716.3	8	40.511	40.025
716.4	8	40.364	39.914
716.5	8	40.239	39.805
716.6	8	40.239	39.694
716.7	8	40.092	39.585
716.8	8	39.799	39.475
716.9	8	39.673	39.364
717	8	39.673	39.255
717.1	8	39.527	39.159
717.2	8	39.233	39.08
717.3	8	39.108	39
717.4	8	39.108	38.919
717.5	8	39.108	38.84
717.6	8	38.898	38.759
717.7	8	38.752	38.68
717.8	8	38.668	38.6
717.9	8	38.668	38.519
718	8	38.605	38.44
718.1	8	38.542	38.4
718.2	8	38.395	38.4
718.3	8	38.395	38.4
718.4	8	38.354	38.4
718.5	8	38.333	38.4
718.6	8	38.312	38.4
718.7	8	38.312	38.4
718.8	8	38.333	38.4
718.9	8	38.354	38.4
719	8	38.375	38.4
719.1	8	38.458	38.441
719.2	8	38.458	38.52
719.3	8	38.479	38.6
719.4	8	38.521	38.681
719.5	8	38.542	38.76
719.6	8	38.584	38.841
719.7	8	38.605	38.92
719.8	8	38.647	39

719.9	8	38.668	39.081
720	8	38.689	39.16
720.1	8	38.731	39.18
720.2	8	38.752	39.14
720.3	8	38.773	39.1
720.4	8	38.793	39.06
720.5	8	38.835	39.02
720.6	8	38.835	38.98
720.7	8	38.856	38.94
720.8	8	38.835	38.9
720.9	8	38.814	38.86
721	8	38.793	38.82
721.1	8	38.752	38.8
721.2	8	38.731	38.8
721.3	8	38.689	38.8
721.4	8	38.647	38.8
721.5	8	38.605	38.8
721.6	8	38.542	38.8
721.7	8	38.5	38.8
721.8	8	38.437	38.8
721.9	8	38.395	38.8
722	8	38.291	38.8
722.1	8	38.06	38.683
722.2	8	37.704	38.455
722.3	8	37.327	38.225
722.4	8	36.95	37.993
722.5	8	36.72	37.765
722.6	8	36.552	37.533
722.7	8	36.447	37.305
722.8	8	36.322	37.075
722.9	8	36.217	36.843
723	8	36.112	36.615
723.1	8	35.966	36.286
723.2	8	35.798	35.87
723.3	8	35.589	35.45
723.4	8	35.358	35.026
723.5	8	35.107	34.61
723.6	8	34.855	34.186
723.7	8	34.604	33.77
723.8	8	34.332	33.35
723.9	8	34.059	32.926
724	8	33.745	32.51
724.1	8	33.305	32.06
724.2	8	32.719	31.595
724.3	8	32.049	31.125



724.4	8	31.315	30.65
724.5	8	30.582	30.185
724.6	8	29.87	29.71
724.7	8	29.305	29.245
724.8	8	28.844	28.775
724.9	8	28.404	28.3
725	8	27.964	27.835
725.1	8	27.503	27.33
725.2	8	27	26.805
725.3	8	27	26.275
725.4	8	25.974	25.74
725.5	8	25.429	25.215
725.6	8	24.906	24.68
725.7	8	24.906	24.155
725.8	8	24.361	23.625
725.9	8	23.209	23.09
726	8	22.643	22.565
726.1	8	22.12	22.045
726.2	8	22.12	21.55
726.3	8	21.24	21.05
726.4	8	20.884	20.545
726.5	8	20.507	20.05
726.6	8	20.507	19.545
726.7	8	20.13	19.05
726.8	8	19.397	18.55
726.9	8	19.083	18.045
727	8	18.747	17.55
727.1	8	18.747	17.004
727.2	8	18.37	16.43
727.3	8	17.574	15.85
727.4	8	17.155	15.264
727.5	8	17.155	14.69
727.6	8	16.736	14.104
727.7	8	16.255	13.53
727.8	8	15.145	12.95
727.9	8	14.516	12.364
728	8	14.516	11.79
728.1	8	13.93	11.209
728.2	8	13.364	10.645
728.3	8	12.086	10.075
728.4	8	12.086	9.499
728.5	8	11.395	8.935
728.6	8	10.704	8.359
728.7	8	10.013	7.795
728.8	8	9.279	7.225

728.9	8	8.546	6.649
729	8	7.792	6.085
729.1	8	7.017	5.565
729.2	8	6.242	5.11
729.3	8	5.467	4.65
729.4	8	4.692	4.185
729.5	8	3.896	3.73
729.6	8	3.037	3.265
729.7	8	2.116	2.81
729.8	8	1.131	2.35
729.9	8	0.587	1.885
730	8	0.44	1.43
730.1	8	0.335	1.139
730.2	8	0.189	1.02
730.3	8	0.209	0.9
730.4	8	0.209	0.779
730.5	8	0.209	0.66
730.6	8	0.105	0.539
730.7	8	0.147	0.42
730.8	8	0.147	0.3
730.9	8	0.084	0.179
731	8	0.105	0.06
731.1	8	0.105	0
731.2	8	0.063	0
731.3	8	0.042	0
731.4	8	0.063	0
731.5	8	0.063	0
731.6	8	0.021	0
731.7	8	0.042	0
731.8	8	0.021	0
731.9	8	0.021	0
732	8	0.021	0
732.1	8	0.021	0
732.2	8	0	0
732.3	8	0	0
732.4	8	0	0
732.5	8	0	0
732.6	8	0	0
732.7	8	0	0
732.8	8	0	0
732.9	8	0	0
733	8	0	0
733.1	8	0	0
733.2	8	0	0
733.3	8	0	0

733.4	8	0	0
733.5	8	0	0
733.6	8	0	0
733.7	8	0	0
733.8	8	0	0
733.9	8	0	0
734	8	0	0
734.1	8	0	0
734.2	8	0	0
734.3	8	0	0
734.4	8	0	0
734.5	8	0	0
734.6	8	0	0
734.7	8	0	0
734.8	8	0	0
734.9	8	0	0
735	8	0	0
735.1	8	0	0
735.2	8	0	0
735.3	8	0	0
735.4	8	0	0
735.5	8	0	0
735.6	8	0	0
735.7	8	0	0
735.8	8	0	0
735.9	8	0	0
736	8	0	0
736.1	8	0	0
736.2	8	0	0
736.3	8	0	0
736.4	8	0	0
736.5	8	0	0
736.6	8	0	0
736.7	8	0	0
736.8	8	0	0
736.9	8	0	0
737	8	0	0
737.1	8	0	0
737.2	8	0.021	0
737.3	8	0.021	0
737.4	8	0.042	0
737.5	8	0.042	0
737.6	8	0.042	0
737.7	8	0.063	0
737.8	8	0.063	0

737.9	8	0.063	0
738	8	0.063	0
738.1	8	0.084	0.041
738.2	8	0.105	0.12
738.3	8	0.147	0.2
738.4	8	0.272	0.281
738.5	8	0.419	0.36
738.6	8	0.607	0.441
738.7	8	1.005	0.52
738.8	8	1.005	0.6
738.9	8	1.236	0.681
739	8	1.466	0.76
739.1	8	1.697	1.228
739.2	8	1.948	2.06
739.3	8	2.22	2.9
739.4	8	2.493	3.748
739.5	8	2.765	4.58
739.6	8	3.037	5.428
739.7	8	3.331	6.26
739.8	8	3.624	7.1
739.9	8	3.959	7.948
740	8	4.315	8.78
740.1	8	4.692	9.491
740.2	8	5.111	10.055
740.3	8	5.53	10.625
740.4	8	5.97	11.201
740.5	8	6.452	11.765
740.6	8	6.912	12.341
740.7	8	7.373	12.905
740.8	8	7.855	13.475
740.9	8	8.358	14.051
741	8	8.84	14.615
741.1	8	9.279	15.068
741.2	8	9.719	15.395
741.3	8	10.18	15.725
741.4	8	10.641	16.058
741.5	8	11.144	16.385
741.6	8	11.646	16.718
741.7	8	12.17	17.045
741.8	8	12.715	17.375
741.9	8	13.238	17.708
742	8	13.762	18.035
742.1	8	14.286	18.404
742.2	8	14.83	18.8
742.3	8	15.396	19.2

742.4	8	15.982	19.604
742.5	8	16.569	20
742.6	8	17.176	20.404
742.7	8	17.784	20.8
742.8	8	18.391	21.2
742.9	8	18.999	21.604
743	8	19.606	22
743.1	8	20.214	22.455
743.2	8	20.842	22.95
743.3	8	21.45	23.45
743.4	8	21.45	23.955
743.5	8	22.685	24.45
743.6	8	23.293	24.955
743.7	8	23.9	25.45
743.8	8	24.508	25.95
743.9	8	24.508	26.455
744	8	25.744	26.95
744.1	8	26.33	27.414
744.2	8	26.938	27.83
744.3	8	27.545	28.25
744.4	8	27.545	28.674
744.5	8	28.739	29.09
744.6	8	29.326	29.514
744.7	8	29.912	29.93
744.8	8	29.912	30.35
744.9	8	30.499	30.774
745	8	31.693	31.19
745.1	8	32.258	31.522
745.2	8	32.845	31.76
745.3	8	32.845	32
745.4	8	33.997	32.242
745.5	8	34.499	32.48
745.6	8	34.855	32.722
745.7	8	34.855	32.96
745.8	8	35.128	33.2
745.9	8	35.589	33.442
746	8	35.819	33.68
746.1	8	35.819	33.973
746.2	8	36.112	34.31
746.3	8	36.426	34.65
746.4	8	36.929	34.993
746.5	8	37.181	35.33
746.6	8	37.181	35.673
746.7	8	37.432	36.01
746.8	8	37.662	36.35

746.9	8	38.144	36.693
747	8	38.144	37.03
747.1	8	38.395	37.384
747.2	8	38.605	37.74
747.3	8	38.793	38.1
747.4	8	39.171	38.464
747.5	8	39.171	38.82
747.6	8	39.338	39.184
747.7	8	39.527	39.54
747.8	8	39.715	39.9
747.9	8	39.925	40.264
748	8	40.113	40.62
748.1	8	40.302	40.963
748.2	8	40.469	41.28
748.3	8	40.658	41.6
748.4	8	40.825	41.923
748.5	8	40.993	42.24
748.6	8	41.16	42.563
748.7	8	41.286	42.88
748.8	8	41.433	43.2
748.9	8	41.579	43.523
749	8	41.747	43.84
749.1	8	41.894	44.117
749.2	8	42.061	44.345
749.3	8	42.25	44.575
749.4	8	42.438	44.807
749.5	8	42.606	45.035
749.6	8	42.794	45.267
749.7	8	42.983	45.495
749.8	8	43.171	45.725
749.9	8	43.339	45.957
750	8	43.507	46.185
750.1	8	43.674	46.366
750.2	8	43.842	46.495
750.3	8	44.009	46.625
750.4	8	44.177	46.756
750.5	8	44.386	46.885
750.6	8	44.659	47.016
750.7	8	44.952	47.145
750.8	8	45.245	47.275
750.9	8	45.601	47.406
751	8	45.957	47.535
751.1	8	46.313	47.697
751.2	8	46.669	47.885
751.3	8	47.026	48.075

751.4	8	47.403	48.267
751.5	8	47.759	48.455
751.6	8	48.115	48.647
751.7	8	48.471	48.835
751.8	8	48.827	49.025
751.9	8	49.162	49.217
752	8	49.476	49.405
752.1	8	49.791	49.587
752.2	8	50.063	49.755
752.3	8	50.293	49.925
752.4	8	50.482	50.097
752.5	8	50.67	50.265
752.6	8	50.859	50.437
752.7	8	51.026	50.605
752.8	8	51.173	50.775
752.9	8	51.299	50.947
753	8	51.424	51.115
753.1	8	51.424	51.292
753.2	8	51.676	51.47
753.3	8	51.78	51.65
753.4	8	51.906	51.832
753.5	8	52.053	52.01
753.6	8	52.178	52.192
753.7	8	52.325	52.37
753.8	8	52.451	52.55
753.9	8	52.576	52.732
754	8	52.576	52.91
754.1	8	52.849	53.071
754.2	8	52.995	53.21
754.3	8	53.142	53.35
754.4	8	53.142	53.491
754.5	8	53.289	53.63
754.6	8	53.624	53.771
754.7	8	53.812	53.91
754.8	8	53.98	54.05
754.9	8	53.98	54.191
755	8	54.168	54.33
755.1	8	54.525	54.461
755.2	8	54.713	54.58
755.3	8	54.713	54.7
755.4	8	54.902	54.821
755.5	8	55.069	54.94
755.6	8	55.446	55.061
755.7	8	55.446	55.18
755.8	8	55.614	55.3

755.9	8	55.781	55.421
756	8	56.116	55.54
756.1	8	56.263	55.641
756.2	8	56.263	55.72
756.3	8	56.368	55.8
756.4	8	56.473	55.881
756.5	8	56.661	55.96
756.6	8	56.661	56.041
756.7	8	56.745	56.12
756.8	8	56.808	56.2
756.9	8	56.871	56.281
757	8	56.933	56.36
757.1	8	56.933	56.385
757.2	8	56.975	56.355
757.3	8	56.996	56.325
757.4	8	57.017	56.295
757.5	8	57.038	56.265
757.6	8	57.08	56.235
757.7	8	57.101	56.205
757.8	8	57.122	56.175
757.9	8	57.143	56.145
758	8	57.122	56.115
758.1	8	57.101	56.105
758.2	8	57.038	56.115
758.3	8	56.975	56.125
758.4	8	56.912	56.135
758.5	8	56.85	56.145
758.6	8	56.766	56.155
758.7	8	56.703	56.165
758.8	8	56.598	56.175
758.9	8	56.514	56.185
759	8	56.41	56.195
759.1	8	56.326	56.18
759.2	8	56.242	56.14
759.3	8	56.158	56.1
759.4	8	56.075	56.06
759.5	8	55.97	56.02
759.6	8	55.886	55.98
759.7	8	55.823	55.94
759.8	8	55.76	55.9
759.9	8	55.718	55.86
760	8	55.677	55.82
760.1	8	55.635	55.764
760.2	8	55.614	55.695
760.3	8	55.593	55.625



760.4	8	55.551	55.554
760.5	8	55.53	55.485
760.6	8	55.488	55.414
760.7	8	55.425	55.345
760.8	8	55.362	55.275
760.9	8	55.279	55.204
761	8	55.216	55.135
761.1	8	55.132	55.064
761.2	8	55.069	54.995
761.3	8	54.985	54.925
761.4	8	54.902	54.854
761.5	8	54.818	54.785
761.6	8	54.713	54.714
761.7	8	54.629	54.645
761.8	8	54.545	54.575
761.9	8	54.462	54.504
762	8	54.399	54.435
762.1	8	54.336	54.39
762.2	8	54.273	54.37
762.3	8	54.231	54.35
762.4	8	54.189	54.33
762.5	8	54.168	54.31
762.6	8	54.168	54.29
762.7	8	54.147	54.27
762.8	8	54.168	54.25
762.9	8	54.189	54.23
763	8	54.21	54.21
763.1	8	54.231	54.21
763.2	8	54.231	54.23
763.3	8	54.294	54.25
763.4	8	54.336	54.27
763.5	8	54.357	54.29
763.6	8	54.399	54.31
763.7	8	54.399	54.33
763.8	8	54.462	54.35
763.9	8	54.483	54.37
764	8	54.483	54.39
764.1	8	54.483	54.39
764.2	8	54.483	54.37
764.3	8	54.441	54.35
764.4	8	54.399	54.33
764.5	8	54.399	54.31
764.6	8	54.357	54.29
764.7	8	54.315	54.27
764.8	8	54.189	54.25

764.9	8	54.127	54.23
765	8	54.127	54.21
765.1	8	54.064	54.164
765.2	8	54.001	54.095
765.3	8	53.875	54.025
765.4	8	53.875	53.954
765.5	8	53.791	53.885
765.6	8	53.708	53.814
765.7	8	53.561	53.745
765.8	8	53.498	53.675
765.9	8	53.498	53.604
766	8	53.435	53.535
766.1	8	53.372	53.439
766.2	8	53.226	53.32
766.3	8	53.226	53.2
766.4	8	53.163	53.079
766.5	8	53.1	52.96
766.6	8	53.037	52.839
766.7	8	52.995	52.72
766.8	8	52.954	52.6
766.9	8	52.933	52.479
767	8	52.912	52.36
767.1	8	52.891	52.285
767.2	8	52.891	52.255
767.3	8	52.87	52.225
767.4	8	52.87	52.195
767.5	8	52.849	52.165
767.6	8	52.849	52.135
767.7	8	52.828	52.105
767.8	8	52.828	52.075
767.9	8	52.807	52.045
768	8	52.786	52.015
768.1	8	52.765	51.995
768.2	8	52.723	51.985
768.3	8	52.681	51.975
768.4	8	52.66	51.965
768.5	8	52.618	51.955
768.6	8	52.576	51.945
768.7	8	52.535	51.935
768.8	8	52.493	51.925
768.9	8	52.451	51.915
769	8	52.388	51.905
769.1	8	52.346	51.895
769.2	8	52.283	51.885
769.3	8	52.22	51.875

769.4	8	52.22	51.865
769.5	8	52.116	51.855
769.6	8	52.053	51.845
769.7	8	52.011	51.835
769.8	8	51.948	51.825
769.9	8	51.885	51.815
770	8	51.843	51.805
770.1	8	51.801	51.805
770.2	8	51.78	51.815
770.3	8	51.76	51.825
770.4	8	51.76	51.835
770.5	8	51.76	51.845
770.6	8	51.76	51.855
770.7	8	51.801	51.865
770.8	8	51.822	51.875
770.9	8	51.864	51.885
771	8	51.906	51.895
771.1	8	51.927	51.905
771.2	8	51.99	51.915
771.3	8	52.032	51.925
771.4	8	52.074	51.935
771.5	8	52.116	51.945
771.6	8	52.178	51.955
771.7	8	52.241	51.965
771.8	8	52.283	51.975
771.9	8	52.346	51.985
772	8	52.388	51.995
772.1	8	52.451	52.026
772.2	8	52.514	52.075
772.3	8	52.556	52.128
772.4	8	52.556	52.175
772.5	8	52.681	52.225
772.6	8	52.744	52.276
772.7	8	52.807	52.325
772.8	8	52.807	52.375
772.9	8	52.87	52.425
773	8	53.016	52.475
773.1	8	53.079	52.546
773.2	8	53.142	52.635
773.3	8	53.142	52.725
773.4	8	53.289	52.816
773.5	8	53.372	52.905
773.6	8	53.456	52.996
773.7	8	53.456	53.085
773.8	8	53.54	53.175

773.9	8	53.729	53.266
774	8	53.833	53.355
774.1	8	53.917	53.477
774.2	8	53.917	53.625
774.3	8	54.022	53.775
774.4	8	54.21	53.927
774.5	8	54.315	54.075
774.6	8	54.315	54.227
774.7	8	54.42	54.375
774.8	8	54.525	54.525
774.9	8	54.755	54.677
775	8	54.881	54.825
775.1	8	54.881	54.997
775.2	8	55.006	55.185
775.3	8	55.111	55.375
775.4	8	55.362	55.567
775.5	8	55.362	55.755
775.6	8	55.488	55.947
775.7	8	55.614	56.135
775.8	8	55.739	56.325
775.9	8	56.054	56.517
776	8	56.054	56.705
776.1	8	56.242	56.902
776.2	8	56.452	57.1
776.3	8	56.661	57.312
776.4	8	56.85	57.502
776.5	8	57.038	57.7
776.6	8	57.248	57.902
776.7	8	57.457	58.1
776.8	8	57.687	58.3
776.9	8	57.96	58.502
777	8	58.274	58.7
777.1	8	58.588	58.892
777.2	8	58.923	59.07
777.3	8	59.258	59.25
777.4	8	59.594	59.432
777.5	8	59.95	59.61
777.6	8	60.306	59.792
777.7	8	60.641	59.97
777.8	8	60.976	60.15
777.9	8	61.332	60.332
778	8	61.667	60.51
778.1	8	62.023	60.687
778.2	8	62.359	60.855
778.3	8	62.694	61.025

778.4	8	62.966	61.197
778.5	8	63.176	61.365
778.6	8	63.364	61.537
778.7	8	63.511	61.705
778.8	8	63.657	61.875
778.9	8	63.804	62.047
779	8	63.951	62.215
779.1	8	64.076	62.397
779.2	8	64.202	62.585
779.3	8	64.307	62.775
779.4	8	64.39	62.967
779.5	8	64.495	63.155
779.6	8	64.579	63.347
779.7	8	64.663	63.535
779.8	8	64.747	63.725
779.9	8	64.851	63.917
780	8	64.956	64.105
780.1	8	65.082	64.302
780.2	8	65.207	64.5
780.3	8	65.333	64.7
780.4	8	65.438	64.902
780.5	8	65.563	65.1
780.6	8	65.689	65.302
780.7	8	65.815	65.5
780.8	8	65.92	65.7
780.9	8	66.024	65.902
781	8	66.129	66.1
781.1	8	66.234	66.282
781.2	8	66.339	66.44
781.3	8	66.443	66.6
781.4	8	66.548	66.762
781.5	8	66.653	66.92
781.6	8	66.757	67.082
781.7	8	66.757	67.24
781.8	8	66.988	67.4
781.9	8	67.093	67.562
782	8	67.197	67.72
782.1	8	67.197	67.882
782.2	8	67.302	68.04
782.3	8	67.553	68.2
782.4	8	67.553	68.362
782.5	8	67.805	68.52
782.6	8	67.805	68.682
782.7	8	68.161	68.84
782.8	8	68.37	69

782.9	8	68.58	69.162
783	8	68.58	69.32
783.1	8	68.789	69.451
783.2	8	69.208	69.55
783.3	8	69.418	69.65
783.4	8	69.648	69.751
783.5	8	69.648	69.85
783.6	8	69.858	69.951
783.7	8	70.235	70.05
783.8	8	70.36	70.15
783.9	8	70.36	70.251
784	8	70.444	70.35
784.1	8	70.528	70.41
784.2	8	70.654	70.43
784.3	8	70.654	70.45
784.4	8	70.695	70.47
784.5	8	70.737	70.49
784.6	8	70.779	70.51
784.7	8	70.821	70.53
784.8	8	70.821	70.55
784.9	8	70.863	70.57
785	8	70.884	70.59
785.1	8	70.926	70.605
785.2	8	70.926	70.615
785.3	8	70.926	70.625
785.4	8	70.947	70.635
785.5	8	70.968	70.645
785.6	8	70.968	70.655
785.7	8	70.989	70.665
785.8	8	71.01	70.675
785.9	8	71.031	70.685
786	8	71.031	70.695
786.1	8	71.052	70.68
786.2	8	71.052	70.64
786.3	8	71.031	70.6
786.4	8	71.01	70.56
786.5	8	70.968	70.52
786.6	8	70.905	70.48
786.7	8	70.842	70.44
786.8	8	70.758	70.4
786.9	8	70.654	70.36
787	8	70.549	70.32
787.1	8	70.444	70.193
787.2	8	70.339	69.985
787.3	8	70.235	69.775

787.4	8	70.088	69.563
787.5	8	69.899	69.355
787.6	8	69.732	69.143
787.7	8	69.564	68.935
787.8	8	69.376	68.725
787.9	8	69.187	68.513
788	8	69.02	68.305
788.1	8	68.831	68.113
788.2	8	68.643	67.945
788.3	8	68.454	67.775
788.4	8	68.266	67.603
788.5	8	68.077	67.435
788.6	8	67.889	67.263
788.7	8	67.7	67.095
788.8	8	67.512	66.925
788.9	8	67.323	66.753
789	8	67.155	66.585
789.1	8	66.967	66.418
789.2	8	66.757	66.26
789.3	8	66.527	66.1
789.4	8	66.276	65.938
789.5	8	66.024	65.78
789.6	8	65.773	65.618
789.7	8	65.501	65.46
789.8	8	65.249	65.3
789.9	8	64.998	65.138
790	8	64.726	64.98
790.1	8	64.453	64.839
790.2	8	64.181	64.72
790.3	8	63.93	64.6
790.4	8	63.657	64.479
790.5	8	63.385	64.36
790.6	8	63.113	64.239
790.7	8	62.861	64.12
790.8	8	62.861	64
790.9	8	62.547	63.879
791	8	62.442	63.76
791.1	8	62.338	63.639
791.2	8	62.233	63.52
791.3	8	62.233	63.4
791.4	8	62.023	63.279
791.5	8	61.94	63.16
791.6	8	61.856	63.039
791.7	8	61.856	62.92
791.8	8	61.772	62.8

791.9	8	61.605	62.679
792	8	61.521	62.56
792.1	8	61.437	62.424
792.2	8	61.437	62.275
792.3	8	61.269	62.125
792.4	8	61.186	61.973
792.5	8	61.102	61.825
792.6	8	61.102	61.674
792.7	8	60.997	61.525
792.8	8	60.809	61.375
792.9	8	60.704	61.223
793	8	60.704	61.075
793.1	8	60.62	60.913
793.2	8	60.515	60.745
793.3	8	60.327	60.575
793.4	8	60.243	60.403
793.5	8	60.243	60.235
793.6	8	60.138	60.063
793.7	8	60.054	59.895
793.8	8	59.866	59.725
793.9	8	59.866	59.553
794	8	59.761	59.385
794.1	8	59.677	59.218
794.2	8	59.468	59.06
794.3	8	59.468	58.9
794.4	8	59.342	58.738
794.5	8	59.217	58.58
794.6	8	59.049	58.418
794.7	8	58.609	58.26
794.8	8	58.609	58.1
794.9	8	58.337	57.938
795	8	58.085	57.78
795.1	8	57.876	57.613
795.2	8	57.729	57.445
795.3	8	57.625	57.275
795.4	8	57.625	57.103
795.5	8	57.394	56.935
795.6	8	57.31	56.763
795.7	8	57.185	56.595
795.8	8	57.08	56.425
795.9	8	56.975	56.253
796	8	56.871	56.085
796.1	8	56.766	55.924
796.2	8	56.661	55.775
796.3	8	56.556	55.625



796.4	8	56.431	55.473
796.5	8	56.305	55.325
796.6	8	56.158	55.174
796.7	8	56.012	55.025
796.8	8	55.844	54.875
796.9	8	55.677	54.723
797	8	55.467	54.575
797.1	8	55.258	54.413
797.2	8	55.048	54.245
797.3	8	54.818	54.075
797.4	8	54.608	53.903
797.5	8	54.378	53.735
797.6	8	54.147	53.563
797.7	8	53.938	53.395
797.8	8	53.708	53.225
797.9	8	53.477	53.053
798	8	53.247	52.885
798.1	8	53.016	52.718
798.2	8	52.786	52.56
798.3	8	52.556	52.4
798.4	8	52.325	52.238
798.5	8	52.095	52.08
798.6	8	51.864	51.918
798.7	8	51.634	51.76
798.8	8	51.403	51.6
798.9	8	51.152	51.438
799	8	50.922	51.28
799.1	8	50.67	51.113
799.2	8	50.44	50.945
799.3	8	50.209	50.775
799.4	8	49.979	50.603
799.5	8	49.77	50.435
799.6	8	49.56	50.263
799.7	8	49.372	50.095
799.8	8	49.204	49.925
799.9	8	49.036	49.753
800	8	49.036	49.585
800.1	8	48.743	49.424
800.2	8	48.597	49.275
800.3	8	48.471	49.125
800.4	8	48.345	48.973
800.5	8	48.22	48.825
800.6	8	48.094	48.674
800.7	8	47.989	48.525
800.8	8	47.863	48.375

800.9	8	47.863	48.223
801	8	47.612	48.075
801.1	8	47.486	47.913
801.2	8	47.361	47.745
801.3	8	47.361	47.575
801.4	8	47.235	47.403
801.5	8	46.984	47.235
801.6	8	46.858	47.063
801.7	8	46.858	46.895
801.8	8	46.711	46.725
801.9	8	46.397	46.553
802	8	46.23	46.385
802.1	8	46.062	46.183
802.2	8	46.062	45.955
802.3	8	45.894	45.725
802.4	8	45.538	45.493
802.5	8	45.35	45.265
802.6	8	45.35	45.033
802.7	8	45.161	44.805
802.8	8	44.994	44.575
802.9	8	44.617	44.343
803	8	44.617	44.115
803.1	8	44.407	43.852
803.2	8	44.219	43.565
803.3	8	43.779	43.275
803.4	8	43.527	42.982
803.5	8	43.527	42.695
803.6	8	43.297	42.402
803.7	8	43.025	42.098
803.8	8	42.501	41.825
803.9	8	42.501	41.532
804	8	42.229	41.245
804.1	8	41.956	40.983
804.2	8	41.684	40.755
804.3	8	41.119	40.525
804.4	8	41.119	40.293
804.5	8	40.846	40.065
804.6	8	40.553	39.833
804.7	8	40.26	39.605
804.8	8	39.966	39.375
804.9	8	39.652	39.143
805	8	39.338	38.915
805.1	8	39.024	38.744
805.2	8	38.752	38.635
805.3	8	38.563	38.525

805.4	8	38.416	38.414
805.5	8	38.27	38.305
805.6	8	38.123	38.187
805.7	8	37.977	38.085
805.8	8	37.83	37.975
805.9	8	37.704	37.864
806	8	37.558	37.755
806.1	8	37.453	37.644
806.2	8	37.348	37.535
806.3	8	37.243	37.425
806.4	8	37.139	37.314
806.5	8	37.034	37.205
806.6	8	36.929	37.094
806.7	8	36.824	36.985
806.8	8	36.72	36.875
806.9	8	36.594	36.764
807	8	36.447	36.655
807.1	8	36.301	36.534
807.2	8	36.154	36.405
807.3	8	36.008	36.275
807.4	8	35.84	36.144
807.5	8	35.693	36.015
807.6	8	35.505	35.884
807.7	8	35.295	35.755
807.8	8	35.065	35.625
807.9	8	34.772	35.494
808	8	34.437	35.365
808.1	8	34.059	35.03
808.2	8	33.641	34.505
808.3	8	33.243	33.975
808.4	8	33.243	33.44
808.5	8	32.363	32.915
808.6	8	31.86	32.38
808.7	8	31.336	31.855
808.8	8	30.792	31.325
808.9	8	30.205	30.79
809	8	29.64	30.265
809.1	8	29.095	29.714
809.2	8	28.571	29.16
809.3	8	28.027	28.6
809.4	8	27.44	28.034
809.5	8	26.833	27.48
809.6	8	26.225	26.914
809.7	8	25.597	26.36
809.8	8	24.969	25.8

809.9	8	24.319	25.234
810	8	23.607	24.68
810.1	8	23.607	24.165
810.2	8	22.225	23.71
810.3	8	21.554	23.25
810.4	8	20.905	22.785
810.5	8	20.905	22.33
810.6	8	20.277	21.865
810.7	8	19.124	21.41
810.8	8	18.538	20.95
810.9	8	17.972	20.485
811	8	17.972	20.03
811.1	8	16.883	19.581
811.2	8	16.297	19.155
811.3	8	15.71	18.725
811.4	8	15.71	18.291
811.5	8	15.165	17.865
811.6	8	14.202	17.431
811.7	8	13.762	17.005
811.8	8	13.762	16.575
811.9	8	13.385	16.141
812	8	13.05	15.715
812.1	8	12.568	15.26
812.2	8	12.359	14.795
812.3	8	12.359	14.325
812.4	8	12.149	13.85
812.5	8	11.772	13.385
812.6	8	11.542	12.91
812.7	8	11.542	12.445
812.8	8	11.332	11.975
812.9	8	11.123	11.5
813	8	10.683	11.035
813.1	8	10.683	10.571
813.2	8	10.494	10.125
813.3	8	10.306	9.675
813.4	8	10.117	9.22
813.5	8	9.782	8.775
813.6	8	9.782	8.321
813.7	8	9.615	7.875
813.8	8	9.426	7.425
813.9	8	9.238	6.97
814	8	9.049	6.525
814.1	8	8.86	6.142
814.2	8	8.672	5.835
814.3	8	8.442	5.525

814.4	8	8.19	5.212
814.5	8	7.918	4.905
814.6	8	7.604	4.592
814.7	8	7.248	4.285
814.8	8	6.787	3.975
814.9	8	6.263	3.662
815	8	5.739	3.355
815.1	8	5.237	3.144
815.2	8	4.734	3.035
815.3	8	4.21	2.925
815.4	8	3.77	2.814
815.5	8	3.456	2.705
815.6	8	3.247	2.594
815.7	8	3.058	2.485
815.8	8	2.912	2.375
815.9	8	2.786	2.264
816	8	2.702	2.155
816.1	8	2.597	2.054
816.2	8	2.493	1.965
816.3	8	2.409	1.875
816.4	8	2.283	1.784
816.5	8	2.178	1.695
816.6	8	2.053	1.604
816.7	8	1.948	1.515
816.8	8	1.822	1.425
816.9	8	1.697	1.334
817	8	1.529	1.245
817.1	8	1.362	1.139
817.2	8	1.194	1.02
817.3	8	1.026	0.9
817.4	8	0.859	0.779
817.5	8	0.691	0.66
817.6	8	0.524	0.539
817.7	8	0.377	0.42
817.8	8	0.293	0.3
817.9	8	0.251	0.179
818	8	0.23	0.06
818.1	8	0.23	0
818.2	8	0.23	0
818.3	8	0.23	0
818.4	8	0.23	0
818.5	8	0.209	0
818.6	8	0.209	0
818.7	8	0.209	0
818.8	8	0.209	0

818.9	8	0.209	0
819	8	0.209	0
819.1	9	0.209	0
819.2	9	0.209	0
819.3	9	0.209	0
819.4	9	0.209	0
819.5	9	0.189	0
819.6	9	0.189	0
819.7	9	0.189	0
819.8	9	0.189	0
819.9	9	0.189	0
820	9	0.189	0
820.1	9	0.189	0
820.2	9	0.189	0
820.3	9	0.189	0
820.4	9	0.189	0
820.5	9	0.189	0
820.6	9	0.189	0
820.7	9	0.168	0
820.8	9	0.168	0
820.9	9	0.168	0
821	9	0.168	0
821.1	9	0.168	0
821.2	9	0.168	0
821.3	9	0.168	0
821.4	9	0.168	0
821.5	9	0.168	0
821.6	9	0.168	0
821.7	9	0.168	0
821.8	9	0.168	0
821.9	9	0.168	0
822	9	0.168	0
822.1	9	0.168	0
822.2	9	0.168	0
822.3	9	0.168	0
822.4	9	0.168	0
822.5	9	0.189	0
822.6	9	0.189	0
822.7	9	0.189	0
822.8	9	0.189	0
822.9	9	0.189	0
823	9	0.189	0
823.1	9	0.189	0
823.2	9	0.189	0
823.3	9	0.189	0

823.4	9	0.189	0
823.5	9	0.209	0
823.6	9	0.209	0
823.7	9	0.209	0
823.8	9	0.209	0
823.9	9	0.209	0
824	9	0.209	0
824.1	9	0.209	0
824.2	9	0.209	0
824.3	9	0.209	0
824.4	9	0.23	0
824.5	9	0.293	0
824.6	9	0.44	0
824.7	9	0.587	0
824.8	9	0.796	0
824.9	9	1.026	0
825	9	1.278	0
825.1	9	1.529	0.138
825.2	9	1.801	0.405
825.3	9	2.074	0.675
825.4	9	2.346	0.948
825.5	9	2.639	1.215
825.6	9	2.995	1.488
825.7	9	3.435	1.755
825.8	9	3.938	2.025
825.9	9	4.504	2.298
826	9	5.09	2.565
826.1	9	5.677	3.032
826.2	9	6.305	3.675
826.3	9	6.954	4.325
826.4	9	7.583	4.982
826.5	9	8.211	5.625
826.6	9	8.84	6.281
826.7	9	9.468	6.925
826.8	9	10.096	7.575
826.9	9	10.746	8.231
827	9	11.374	8.875
827.1	9	12.023	9.552
827.2	9	12.631	10.235
827.3	9	13.259	10.925
827.4	9	13.867	11.622
827.5	9	14.474	12.305
827.6	9	15.082	13.002
827.7	9	15.71	13.685
827.8	9	16.339	14.375

827.9	9	16.946	15.072
828	9	17.574	15.755
828.1	9	18.203	16.437
828.2	9	18.852	17.09
828.3	9	19.481	17.75
828.4	9	20.109	18.417
828.5	9	20.758	19.07
828.6	9	21.387	19.737
828.7	9	22.036	20.39
828.8	9	22.664	21.05
828.9	9	23.272	21.717
829	9	23.9	22.37
829.1	9	23.9	23.031
829.2	9	25.052	23.675
829.3	9	25.639	24.325
829.4	9	26.204	24.982
829.5	9	26.204	25.625
829.6	9	27.315	26.281
829.7	9	27.859	26.925
829.8	9	28.404	27.575
829.9	9	28.948	28.232
830	9	28.948	28.875
830.1	9	30.059	29.455
830.2	9	30.624	29.95
830.3	9	31.169	30.45
830.4	9	31.169	30.955
830.5	9	31.693	31.45
830.6	9	32.572	31.955
830.7	9	32.991	32.45
830.8	9	32.991	32.95
830.9	9	33.41	33.455
831	9	33.85	33.95
831.1	9	34.73	34.435
831.2	9	35.17	34.89
831.3	9	35.17	35.35
831.4	9	35.61	35.815
831.5	9	36.091	36.27
831.6	9	37.076	36.735
831.7	9	37.076	37.19
831.8	9	37.579	37.65
831.9	9	38.081	38.115
832	9	39.087	38.57
832.1	9	39.087	39.014
832.2	9	39.589	39.43
832.3	9	40.092	39.85



832.4	9	40.574	40.274
832.5	9	41.475	40.69
832.6	9	41.475	41.114
832.7	9	41.915	41.53
832.8	9	42.354	41.95
832.9	9	42.731	42.374
833	9	43.046	42.79
833.1	9	43.318	43.117
833.2	9	43.548	43.345
833.3	9	43.737	43.575
833.4	9	43.925	43.807
833.5	9	44.093	44.035
833.6	9	44.261	44.267
833.7	9	44.449	44.495
833.8	9	44.638	44.725
833.9	9	44.826	44.957
834	9	45.015	45.185
834.1	9	45.203	45.376
834.2	9	45.371	45.525
834.3	9	45.538	45.675
834.4	9	45.538	45.826
834.5	9	45.811	45.975
834.6	9	45.957	46.126
834.7	9	46.083	46.275
834.8	9	46.209	46.425
834.9	9	46.355	46.576
835	9	46.502	46.725
835.1	9	46.649	46.861
835.2	9	46.795	46.98
835.3	9	46.942	47.1
835.4	9	47.088	47.221
835.5	9	47.235	47.34
835.6	9	47.361	47.461
835.7	9	47.507	47.58
835.8	9	47.633	47.7
835.9	9	47.78	47.821
836	9	47.926	47.94
836.1	9	48.073	48.076
836.2	9	48.22	48.225
836.3	9	48.345	48.375
836.4	9	48.492	48.527
836.5	9	48.638	48.675
836.6	9	48.785	48.826
836.7	9	48.911	48.975
836.8	9	49.057	49.125

836.9	9	49.204	49.277
837	9	49.351	49.425
837.1	9	49.497	49.541
837.2	9	49.644	49.62
837.3	9	49.791	49.7
837.4	9	49.916	49.781
837.5	9	50.021	49.86
837.6	9	50.126	49.941
837.7	9	50.23	50.02
837.8	9	50.335	50.1
837.9	9	50.461	50.181
838	9	50.566	50.26
838.1	9	50.67	50.361
838.2	9	50.67	50.48
838.3	9	50.901	50.6
838.4	9	51.026	50.721
838.5	9	51.131	50.84
838.6	9	51.236	50.961
838.7	9	51.236	51.08
838.8	9	51.466	51.2
838.9	9	51.592	51.321
839	9	51.676	51.44
839.1	9	51.676	51.536
839.2	9	51.822	51.605
839.3	9	51.906	51.675
839.4	9	51.99	51.746
839.5	9	51.99	51.815
839.6	9	52.074	51.886
839.7	9	52.22	51.955
839.8	9	52.283	52.025
839.9	9	52.346	52.096
840	9	52.346	52.165
840.1	9	52.409	52.22
840.2	9	52.493	52.26
840.3	9	52.535	52.3
840.4	9	52.535	52.34
840.5	9	52.576	52.38
840.6	9	52.618	52.42
840.7	9	52.723	52.46
840.8	9	52.765	52.5
840.9	9	52.765	52.54
841	9	52.807	52.58
841.1	9	52.849	52.62
841.2	9	52.954	52.66
841.3	9	52.954	52.7

841.4	9	52.995	52.74
841.5	9	53.037	52.78
841.6	9	53.142	52.82
841.7	9	53.142	52.86
841.8	9	53.205	52.9
841.9	9	53.268	52.94
842	9	53.331	52.98
842.1	9	53.435	53.041
842.2	9	53.435	53.12
842.3	9	53.498	53.2
842.4	9	53.561	53.281
842.5	9	53.603	53.36
842.6	9	53.666	53.441
842.7	9	53.708	53.52
842.8	9	53.749	53.6
842.9	9	53.791	53.681
843	9	53.833	53.76
843.1	9	53.875	53.8
843.2	9	53.896	53.8
843.3	9	53.917	53.8
843.4	9	53.938	53.8
843.5	9	53.98	53.8
843.6	9	54.001	53.8
843.7	9	54.022	53.8
843.8	9	54.064	53.8
843.9	9	54.085	53.8
844	9	54.127	53.8
844.1	9	54.168	53.8
844.2	9	54.21	53.8
844.3	9	54.252	53.8
844.4	9	54.294	53.8
844.5	9	54.336	53.8
844.6	9	54.378	53.8
844.7	9	54.42	53.8
844.8	9	54.462	53.8
844.9	9	54.525	53.8
845	9	54.566	53.8
845.1	9	54.629	53.841
845.2	9	54.692	53.92
845.3	9	54.755	54
845.4	9	54.818	54.081
845.5	9	54.881	54.16
845.6	9	54.943	54.241
845.7	9	55.006	54.32
845.8	9	55.069	54.4

845.9	9	55.132	54.481
846	9	55.195	54.56
846.1	9	55.258	54.687
846.2	9	55.32	54.855
846.3	9	55.383	55.025
846.4	9	55.446	55.197
846.5	9	55.509	55.365
846.6	9	55.593	55.537
846.7	9	55.656	55.705
846.8	9	55.718	55.875
846.9	9	55.781	56.047
847	9	55.865	56.215
847.1	9	55.928	56.331
847.2	9	55.991	56.39
847.3	9	55.991	56.45
847.4	9	56.137	56.511
847.5	9	56.137	56.57
847.6	9	56.305	56.631
847.7	9	56.389	56.69
847.8	9	56.494	56.75
847.9	9	56.577	56.811
848	9	56.577	56.87
848.1	9	56.787	56.961
848.2	9	56.892	57.08
848.3	9	57.017	57.2
848.4	9	57.017	57.321
848.5	9	57.269	57.44
848.6	9	57.394	57.561
848.7	9	57.52	57.68
848.8	9	57.52	57.8
848.9	9	57.646	57.921
849	9	57.897	58.04
849.1	9	58.023	58.115
849.2	9	58.127	58.145
849.3	9	58.127	58.175
849.4	9	58.274	58.205
849.5	9	58.504	58.235
849.6	9	58.63	58.265
849.7	9	58.63	58.295
849.8	9	58.756	58.325
849.9	9	58.881	58.355
850	9	59.133	58.385
850.1	9	59.238	58.461
850.2	9	59.238	58.58
850.3	9	59.321	58.7

850.4	9	59.405	58.821
850.5	9	59.51	58.94
850.6	9	59.51	59.061
850.7	9	59.573	59.18
850.8	9	59.636	59.3
850.9	9	59.677	59.421
851	9	59.803	59.54
851.1	9	59.803	59.615
851.2	9	59.845	59.645
851.3	9	59.908	59.675
851.4	9	60.013	59.705
851.5	9	60.013	59.735
851.6	9	60.075	59.765
851.7	9	60.117	59.795
851.8	9	60.18	59.825
851.9	9	60.222	59.855
852	9	60.264	59.885
852.1	9	60.306	59.915
852.2	9	60.348	59.945
852.3	9	60.369	59.975
852.4	9	60.411	60.005
852.5	9	60.452	60.035
852.6	9	60.473	60.065
852.7	9	60.515	60.095
852.8	9	60.557	60.125
852.9	9	60.578	60.155
853	9	60.62	60.185
853.1	9	60.641	60.215
853.2	9	60.683	60.245
853.3	9	60.683	60.275
853.4	9	60.683	60.305
853.5	9	60.683	60.335
853.6	9	60.662	60.365
853.7	9	60.62	60.395
853.8	9	60.578	60.425
853.9	9	60.515	60.455
854	9	60.452	60.485
854.1	9	60.39	60.459
854.2	9	60.327	60.38
854.3	9	60.243	60.3
854.4	9	60.159	60.219
854.5	9	60.075	60.14
854.6	9	59.992	60.059
854.7	9	59.887	59.98
854.8	9	59.803	59.9

854.9	9	59.719	59.819
855	9	59.615	59.74
855.1	9	59.531	59.629
855.2	9	59.447	59.49
855.3	9	59.342	59.35
855.4	9	59.258	59.209
855.5	9	59.175	59.07
855.6	9	59.07	58.929
855.7	9	58.986	58.79
855.8	9	58.902	58.65
855.9	9	58.798	58.509
856	9	58.714	58.37
856.1	9	58.63	58.29
856.2	9	58.546	58.27
856.3	9	58.442	58.25
856.4	9	58.358	58.23
856.5	9	58.274	58.21
856.6	9	58.19	58.19
856.7	9	58.127	58.17
856.8	9	58.044	58.15
856.9	9	58.002	58.13
857	9	57.96	58.11
857.1	9	57.918	58.085
857.2	9	57.876	58.055
857.3	9	57.876	58.025
857.4	9	57.771	57.995
857.5	9	57.729	57.965
857.6	9	57.667	57.935
857.7	9	57.667	57.905
857.8	9	57.541	57.875
857.9	9	57.499	57.845
858	9	57.436	57.815
858.1	9	57.373	57.774
858.2	9	57.373	57.725
858.3	9	57.248	57.675
858.4	9	57.185	57.625
858.5	9	57.122	57.575
858.6	9	57.122	57.524
858.7	9	57.059	57.475
858.8	9	56.996	57.425
858.9	9	56.975	57.375
859	9	56.975	57.325
859.1	9	56.996	57.31
859.2	9	57.017	57.33
859.3	9	57.08	57.35

859.4	9	57.122	57.37
859.5	9	57.122	57.39
859.6	9	57.164	57.41
859.7	9	57.206	57.43
859.8	9	57.269	57.45
859.9	9	57.269	57.47
860	9	57.29	57.49
860.1	9	57.29	57.454
860.2	9	57.248	57.365
860.3	9	57.227	57.275
860.4	9	57.227	57.184
860.5	9	57.122	57.095
860.6	9	57.101	57.004
860.7	9	57.08	56.915
860.8	9	57.08	56.825
860.9	9	57.059	56.734
861	9	57.059	56.645
861.1	9	57.059	56.62
861.2	9	56.996	56.66
861.3	9	56.996	56.7
861.4	9	56.954	56.74
861.5	9	56.912	56.78
861.6	9	56.85	56.82
861.7	9	56.829	56.86
861.8	9	56.808	56.9
861.9	9	56.808	56.94
862	9	56.829	56.98
862.1	9	56.85	56.98
862.2	9	56.85	56.94
862.3	9	56.871	56.9
862.4	9	56.892	56.86
862.5	9	56.892	56.82
862.6	9	56.912	56.78
862.7	9	56.892	56.74
862.8	9	56.892	56.7
862.9	9	56.871	56.66
863	9	56.85	56.62
863.1	9	56.829	56.595
863.2	9	56.808	56.585
863.3	9	56.787	56.575
863.4	9	56.766	56.565
863.5	9	56.745	56.555
863.6	9	56.724	56.545
863.7	9	56.703	56.535
863.8	9	56.703	56.525

863.9	9	56.661	56.515
864	9	56.661	56.505
864.1	9	56.64	56.485
864.2	9	56.619	56.455
864.3	9	56.598	56.425
864.4	9	56.577	56.395
864.5	9	56.556	56.365
864.6	9	56.535	56.335
864.7	9	56.514	56.305
864.8	9	56.494	56.275
864.9	9	56.473	56.245
865	9	56.452	56.215
865.1	9	56.431	56.21
865.2	9	56.41	56.23
865.3	9	56.389	56.25
865.4	9	56.347	56.27
865.5	9	56.326	56.29
865.6	9	56.305	56.31
865.7	9	56.305	56.33
865.8	9	56.284	56.35
865.9	9	56.284	56.37
866	9	56.284	56.39
866.1	9	56.284	56.41
866.2	9	56.284	56.43
866.3	9	56.305	56.45
866.4	9	56.305	56.47
866.5	9	56.305	56.49
866.6	9	56.347	56.51
866.7	9	56.368	56.53
866.8	9	56.41	56.55
866.9	9	56.431	56.57
867	9	56.431	56.59
867.1	9	56.473	56.59
867.2	9	56.473	56.57
867.3	9	56.473	56.55
867.4	9	56.473	56.53
867.5	9	56.452	56.51
867.6	9	56.389	56.49
867.7	9	56.347	56.47
867.8	9	56.284	56.45
867.9	9	56.284	56.43
868	9	56.2	56.41
868.1	9	56.096	56.385
868.2	9	56.033	56.355
868.3	9	56.033	56.325



868.4	9	55.97	56.295
868.5	9	55.907	56.265
868.6	9	55.823	56.235
868.7	9	55.781	56.205
868.8	9	55.781	56.175
868.9	9	55.739	56.145
869	9	55.698	56.115
869.1	9	55.677	56.095
869.2	9	55.677	56.085
869.3	9	55.677	56.075
869.4	9	55.677	56.065
869.5	9	55.677	56.055
869.6	9	55.677	56.045
869.7	9	55.698	56.035
869.8	9	55.718	56.025
869.9	9	55.718	56.015
870	9	55.781	56.005
870.1	9	55.781	55.995
870.2	9	55.823	55.985
870.3	9	55.865	55.975
870.4	9	55.928	55.965
870.5	9	55.928	55.955
870.6	9	55.949	55.945
870.7	9	55.97	55.935
870.8	9	55.949	55.925
870.9	9	55.928	55.915
871	9	55.886	55.905
871.1	9	55.823	55.844
871.2	9	55.76	55.735
871.3	9	55.698	55.625
871.4	9	55.614	55.514
871.5	9	55.53	55.405
871.6	9	55.446	55.294
871.7	9	55.362	55.185
871.8	9	55.279	55.075
871.9	9	55.195	54.964
872	9	55.111	54.855
872.1	9	55.027	54.769
872.2	9	54.943	54.71
872.3	9	54.86	54.65
872.4	9	54.776	54.589
872.5	9	54.692	54.53
872.6	9	54.608	54.469
872.7	9	54.566	54.41
872.8	9	54.525	54.35

872.9	9	54.504	54.289
873	9	54.525	54.23
873.1	9	54.545	54.22
873.2	9	54.587	54.26
873.3	9	54.587	54.3
873.4	9	54.671	54.34
873.5	9	54.713	54.38
873.6	9	54.734	54.42
873.7	9	54.734	54.46
873.8	9	54.713	54.5
873.9	9	54.692	54.54
874	9	54.587	54.58
874.1	9	54.357	54.478
874.2	9	54.022	54.24
874.3	9	53.687	54
874.4	9	53.477	53.758
874.5	9	53.352	53.52
874.6	9	53.268	53.278
874.7	9	53.205	53.04
874.8	9	53.163	52.8
874.9	9	53.163	52.558
875	9	53.205	52.32
875.1	9	53.268	52.327
875.2	9	53.331	52.575
875.3	9	53.393	52.825
875.4	9	53.477	53.077
875.5	9	53.561	53.325
875.6	9	53.666	53.577
875.7	9	53.749	53.825
875.8	9	53.833	54.075
875.9	9	53.917	54.327
876	9	54.022	54.575
876.1	9	54.022	54.751
876.2	9	54.21	54.85
876.3	9	54.336	54.95
876.4	9	54.462	55.051
876.5	9	54.629	55.15
876.6	9	54.629	55.251
876.7	9	54.985	55.35
876.8	9	55.174	55.45
876.9	9	55.362	55.551
877	9	55.362	55.65
877.1	9	55.551	55.766
877.2	9	55.907	55.895
877.3	9	56.096	56.025

877.4	9	56.263	56.156
877.5	9	56.263	56.285
877.6	9	56.431	56.416
877.7	9	56.703	56.545
877.8	9	56.808	56.675
877.9	9	56.808	56.806
878	9	56.912	56.935
878.1	9	57.08	57.051
878.2	9	57.164	57.15
878.3	9	57.164	57.25
878.4	9	57.248	57.351
878.5	9	57.331	57.45
878.6	9	57.457	57.551
878.7	9	57.52	57.65
878.8	9	57.52	57.75
878.9	9	57.583	57.851
879	9	57.646	57.95
879.1	9	57.771	58.005
879.2	9	57.771	58.015
879.3	9	57.855	58.025
879.4	9	57.918	58.035
879.5	9	58.023	58.045
879.6	9	58.023	58.055
879.7	9	58.085	58.065
879.8	9	58.148	58.075
879.9	9	58.19	58.085
880	9	58.253	58.095
880.1	9	58.316	58.166
880.2	9	58.379	58.295
880.3	9	58.463	58.425
880.4	9	58.525	58.556
880.5	9	58.588	58.685
880.6	9	58.651	58.816
880.7	9	58.735	58.945
880.8	9	58.798	59.075
880.9	9	58.881	59.206
881	9	58.944	59.335
881.1	9	59.028	59.426
881.2	9	59.112	59.475
881.3	9	59.175	59.525
881.4	9	59.279	59.576
881.5	9	59.363	59.625
881.6	9	59.447	59.676
881.7	9	59.552	59.725
881.8	9	59.677	59.775

881.9	9	59.782	59.826
882	9	59.887	59.878
882.1	9	59.992	59.956
882.2	9	60.117	60.065
882.3	9	60.222	60.175
882.4	9	60.348	60.286
882.5	9	60.452	60.395
882.6	9	60.557	60.506
882.7	9	60.683	60.615
882.8	9	60.788	60.725
882.9	9	60.892	60.836
883	9	60.997	60.945
883.1	9	61.102	61.02
883.2	9	61.165	61.06
883.3	9	61.248	61.1
883.4	9	61.311	61.14
883.5	9	61.395	61.18
883.6	9	61.458	61.22
883.7	9	61.521	61.26
883.8	9	61.605	61.3
883.9	9	61.646	61.34
884	9	61.709	61.38
884.1	9	61.751	61.426
884.2	9	61.814	61.475
884.3	9	61.856	61.525
884.4	9	61.919	61.576
884.5	9	61.961	61.625
884.6	9	62.003	61.676
884.7	9	62.065	61.725
884.8	9	62.107	61.775
884.9	9	62.17	61.826
885	9	62.212	61.875
885.1	9	62.275	61.931
885.2	9	62.338	61.99
885.3	9	62.38	62.05
885.4	9	62.421	62.111
885.5	9	62.442	62.17
885.6	9	62.484	62.231
885.7	9	62.484	62.29
885.8	9	62.568	62.35
885.9	9	62.589	62.411
886	9	62.631	62.47
886.1	9	62.652	62.5
886.2	9	62.652	62.5
886.3	9	62.694	62.5

886.4	9	62.757	62.5
886.5	9	62.778	62.5
886.6	9	62.778	62.5
886.7	9	62.861	62.5
886.8	9	62.903	62.5
886.9	9	62.924	62.5
887	9	62.924	62.5
887.1	9	62.966	62.51
887.2	9	63.029	62.53
887.3	9	63.05	62.55
887.4	9	63.05	62.57
887.5	9	63.071	62.59
887.6	9	63.092	62.61
887.7	9	63.092	62.63
887.8	9	63.071	62.65
887.9	9	63.071	62.67
888	9	63.05	62.69
888.1	9	63.008	62.674
888.2	9	62.987	62.625
888.3	9	62.987	62.575
888.4	9	62.966	62.525
888.5	9	62.945	62.475
888.6	9	62.882	62.424
888.7	9	62.882	62.375
888.8	9	62.84	62.325
888.9	9	62.819	62.275
889	9	62.799	62.225
889.1	9	62.778	62.215
889.2	9	62.778	62.245
889.3	9	62.757	62.275
889.4	9	62.757	62.305
889.5	9	62.757	62.335
889.6	9	62.757	62.365
889.7	9	62.778	62.395
889.8	9	62.799	62.425
889.9	9	62.84	62.455
890	9	62.882	62.485
890.1	9	62.903	62.531
890.2	9	62.945	62.59
890.3	9	62.987	62.65
890.4	9	63.008	62.711
890.5	9	63.05	62.77
890.6	9	63.092	62.831
890.7	9	63.113	62.89
890.8	9	63.155	62.95

890.9	9	63.176	63.011
891	9	63.176	63.07
891.1	9	63.176	63.08
891.2	9	63.155	63.04
891.3	9	63.155	63
891.4	9	63.134	62.96
891.5	9	63.134	62.92
891.6	9	63.134	62.88
891.7	9	63.113	62.84
891.8	9	63.113	62.8
891.9	9	63.092	62.76
892	9	63.071	62.72
892.1	9	63.05	62.705
892.2	9	63.029	62.715
892.3	9	63.008	62.725
892.4	9	62.987	62.735
892.5	9	62.987	62.745
892.6	9	63.008	62.755
892.7	9	63.029	62.765
892.8	9	63.05	62.775
892.9	9	63.071	62.785
893	9	63.113	62.795
893.1	9	63.155	62.81
893.2	9	63.176	62.83
893.3	9	63.217	62.85
893.4	9	63.28	62.87
893.5	9	63.322	62.89
893.6	9	63.385	62.91
893.7	9	63.427	62.93
893.8	9	63.469	62.95
893.9	9	63.511	62.97
894	9	63.553	62.99
894.1	9	63.574	63.056
894.2	9	63.594	63.165
894.3	9	63.615	63.275
894.4	9	63.657	63.386
894.5	9	63.678	63.495
894.6	9	63.72	63.606
894.7	9	63.72	63.715
894.8	9	63.783	63.825
894.9	9	63.825	63.936
895	9	63.846	64.045
895.1	9	63.888	64.09
895.2	9	63.888	64.07
895.3	9	63.951	64.05

895.4	9	63.992	64.03
895.5	9	64.013	64.01
895.6	9	64.013	63.99
895.7	9	64.076	63.97
895.8	9	64.118	63.95
895.9	9	64.139	63.93
896	9	64.139	63.91
896.1	9	64.181	63.91
896.2	9	64.223	63.93
896.3	9	64.244	63.95
896.4	9	64.265	63.97
896.5	9	64.265	63.99
896.6	9	64.328	64.01
896.7	9	64.349	64.03
896.8	9	64.37	64.05
896.9	9	64.37	64.07
897	9	64.39	64.09
897.1	9	64.432	64.11
897.2	9	64.474	64.13
897.3	9	64.474	64.15
897.4	9	64.495	64.17
897.5	9	64.516	64.19
897.6	9	64.6	64.21
897.7	9	64.621	64.23
897.8	9	64.621	64.25
897.9	9	64.642	64.27
898	9	64.684	64.29
898.1	9	64.747	64.31
898.2	9	64.747	64.33
898.3	9	64.768	64.35
898.4	9	64.788	64.37
898.5	9	64.83	64.39
898.6	9	64.851	64.41
898.7	9	64.893	64.43
898.8	9	64.914	64.45
898.9	9	64.956	64.47
899	9	64.977	64.49
899.1	9	64.998	64.52
899.2	9	65.04	64.56
899.3	9	65.04	64.6
899.4	9	65.082	64.64
899.5	9	65.124	64.68
899.6	9	65.145	64.72
899.7	9	65.186	64.76
899.8	9	65.207	64.8

899.9	9	65.228	64.84
900	9	65.27	64.88
900.1	9	65.291	64.92
900.2	9	65.333	64.96
900.3	9	65.354	65
900.4	9	65.396	65.04
900.5	9	65.417	65.08
900.6	9	65.438	65.12
900.7	9	65.48	65.16
900.8	9	65.501	65.2
900.9	9	65.543	65.24
901	9	65.563	65.28
901.1	9	65.605	65.336
901.2	9	65.626	65.405
901.3	9	65.647	65.475
901.4	9	65.689	65.546
901.5	9	65.71	65.615
901.6	9	65.731	65.686
901.7	9	65.773	65.755
901.8	9	65.794	65.825
901.9	9	65.815	65.896
902	9	65.857	65.965
902.1	9	65.878	66
902.2	9	65.899	66
902.3	9	65.92	66
902.4	9	65.961	66
902.5	9	65.982	66
902.6	9	66.003	66
902.7	9	66.024	66
902.8	9	66.066	66
902.9	9	66.087	66
903	9	66.129	66
903.1	9	66.15	66.02
903.2	9	66.171	66.06
903.3	9	66.213	66.1
903.4	9	66.213	66.14
903.5	9	66.234	66.18
903.6	9	66.255	66.22
903.7	9	66.255	66.26
903.8	9	66.255	66.3
903.9	9	66.234	66.34
904	9	66.192	66.38
904.1	9	66.15	66.283
904.2	9	66.066	66.055
904.3	9	66.066	65.825



904.4	9	65.92	65.593
904.5	9	65.815	65.365
904.6	9	65.731	65.133
904.7	9	65.731	64.905
904.8	9	65.522	64.675
904.9	9	65.375	64.443
905	9	65.207	64.215
905.1	9	65.061	64.075
905.2	9	65.061	64.025
905.3	9	64.83	63.975
905.4	9	64.726	63.924
905.5	9	64.621	63.875
905.6	9	64.621	63.824
905.7	9	64.516	63.775
905.8	9	64.328	63.725
905.9	9	64.244	63.674
906	9	64.16	63.625
906.1	9	64.16	63.615
906.2	9	64.097	63.645
906.3	9	63.992	63.675
906.4	9	63.951	63.705
906.5	9	63.951	63.735
906.6	9	63.909	63.765
906.7	9	63.909	63.795
906.8	9	63.93	63.825
906.9	9	63.93	63.855
907	9	63.951	63.885
907.1	9	63.972	63.91
907.2	9	64.013	63.93
907.3	9	64.055	63.95
907.4	9	64.055	63.97
907.5	9	64.076	63.99
907.6	9	64.097	64.01
907.7	9	64.097	64.03
907.8	9	64.097	64.05
907.9	9	64.097	64.07
908	9	64.097	64.09
908.1	9	64.076	64.08
908.2	9	64.055	64.04
908.3	9	64.034	64
908.4	9	63.972	63.96
908.5	9	63.93	63.92
908.6	9	63.846	63.88
908.7	9	63.846	63.84
908.8	9	63.804	63.8

908.9	9	63.783	63.76
909	9	63.762	63.72
909.1	9	63.762	63.731
909.2	9	63.741	63.79
909.3	9	63.741	63.85
909.4	9	63.741	63.911
909.5	9	63.741	63.97
909.6	9	63.741	64.031
909.7	9	63.762	64.09
909.8	9	63.762	64.15
909.9	9	63.783	64.211
910	9	63.804	64.27
910.1	9	63.846	64.295
910.2	9	63.888	64.285
910.3	9	63.93	64.275
910.4	9	63.951	64.265
910.5	9	63.992	64.255
910.6	9	64.013	64.245
910.7	9	64.034	64.235
910.8	9	64.055	64.225
910.9	9	64.076	64.215
911	9	64.076	64.205
911.1	9	64.097	64.185
911.2	9	64.118	64.155
911.3	9	64.139	64.125
911.4	9	64.16	64.095
911.5	9	64.16	64.065
911.6	9	64.16	64.035
911.7	9	64.16	64.005
911.8	9	64.139	63.975
911.9	9	64.139	63.945
912	9	64.139	63.915
912.1	9	64.118	63.915
912.2	9	64.118	63.945
912.3	9	64.118	63.975
912.4	9	64.097	64.005
912.5	9	64.097	64.035
912.6	9	64.097	64.065
912.7	9	64.076	64.095
912.8	9	64.076	64.125
912.9	9	64.034	64.155
913	9	64.013	64.185
913.1	9	63.992	64.159
913.2	9	63.972	64.08
913.3	9	63.951	64

913.4	9	63.93	63.919
913.5	9	63.909	63.84
913.6	9	63.909	63.759
913.7	9	63.909	63.68
913.8	9	63.909	63.6
913.9	9	63.909	63.519
914	9	63.909	63.44
914.1	9	63.93	63.431
914.2	9	63.951	63.49
914.3	9	63.951	63.55
914.4	9	63.992	63.611
914.5	9	64.034	63.67
914.6	9	64.055	63.731
914.7	9	64.055	63.79
914.8	9	64.076	63.85
914.9	9	64.139	63.911
915	9	64.16	63.97
915.1	9	64.16	63.995
915.2	9	64.16	63.985
915.3	9	64.139	63.975
915.4	9	64.118	63.965
915.5	9	64.118	63.955
915.6	9	64.118	63.945
915.7	9	64.118	63.935
915.8	9	64.097	63.925
915.9	9	64.097	63.915
916	9	64.097	63.905
916.1	9	64.076	63.905
916.2	9	64.076	63.915
916.3	9	64.055	63.925
916.4	9	64.055	63.935
916.5	9	64.055	63.945
916.6	9	64.034	63.955
916.7	9	64.013	63.965
916.8	9	63.992	63.975
916.9	9	63.992	63.985
917	9	63.972	63.995
917.1	9	63.951	63.99
917.2	9	63.93	63.97
917.3	9	63.93	63.95
917.4	9	63.909	63.93
917.5	9	63.888	63.91
917.6	9	63.888	63.89
917.7	9	63.888	63.87
917.8	9	63.888	63.85

917.9	9	63.888	63.83
918	9	63.909	63.81
918.1	9	63.909	63.81
918.2	9	63.93	63.83
918.3	9	63.93	63.85
918.4	9	63.93	63.87
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918.6	9	63.93	63.91
918.7	9	63.909	63.93
918.8	9	63.909	63.95
918.9	9	63.888	63.97
919	9	63.867	63.99
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919.2	9	63.825	63.895
919.3	9	63.825	63.825
919.4	9	63.804	63.754
919.5	9	63.783	63.685
919.6	9	63.762	63.614
919.7	9	63.741	63.545
919.8	9	63.72	63.475
919.9	9	63.699	63.404
920	9	63.678	63.335
920.1	9	63.678	63.305
920.2	9	63.657	63.315
920.3	9	63.636	63.325
920.4	9	63.615	63.335
920.5	9	63.594	63.345
920.6	9	63.594	63.355
920.7	9	63.594	63.365
920.8	9	63.594	63.375
920.9	9	63.594	63.385
921	9	63.615	63.395
921.1	9	63.615	63.426
921.2	9	63.615	63.475
921.3	9	63.636	63.525
921.4	9	63.636	63.576
921.5	9	63.657	63.625
921.6	9	63.678	63.676
921.7	9	63.699	63.725
921.8	9	63.72	63.775
921.9	9	63.741	63.826
922	9	63.762	63.875
922.1	9	63.783	63.905
922.2	9	63.804	63.915
922.3	9	63.825	63.925

922.4	9	63.846	63.935
922.5	9	63.888	63.945
922.6	9	63.909	63.955
922.7	9	63.951	63.965
922.8	9	63.972	63.975
922.9	9	63.992	63.985
923	9	64.034	63.995
923.1	9	64.055	64.015
923.2	9	64.076	64.045
923.3	9	64.118	64.075
923.4	9	64.139	64.105
923.5	9	64.139	64.135
923.6	9	64.202	64.165
923.7	9	64.244	64.195
923.8	9	64.265	64.225
923.9	9	64.265	64.255
924	9	64.307	64.285
924.1	9	64.39	64.326
924.2	9	64.411	64.375
924.3	9	64.453	64.425
924.4	9	64.453	64.476
924.5	9	64.495	64.525
924.6	9	64.558	64.576
924.7	9	64.6	64.625
924.8	9	64.6	64.675
924.9	9	64.621	64.726
925	9	64.705	64.775
925.1	9	64.747	64.815
925.2	9	64.747	64.845
925.3	9	64.747	64.875
925.4	9	64.809	64.905
925.5	9	64.872	64.935
925.6	9	64.893	64.965
925.7	9	64.893	64.995
925.8	9	64.893	65.025
925.9	9	64.893	65.055
926	9	64.788	65.085
926.1	9	64.788	65.044
926.2	9	64.726	64.935
926.3	9	64.642	64.825
926.4	9	64.579	64.714
926.5	9	64.39	64.605
926.6	9	64.39	64.494
926.7	9	64.307	64.385
926.8	9	64.223	64.275

926.9	9	64.181	64.164
927	9	64.139	64.055
927.1	9	64.118	64.01
927.2	9	64.118	64.03
927.3	9	64.118	64.05
927.4	9	64.16	64.07
927.5	9	64.16	64.09
927.6	9	64.181	64.11
927.7	9	64.202	64.13
927.8	9	64.223	64.15
927.9	9	64.223	64.17
928	9	64.202	64.19
928.1	9	64.16	64.144
928.2	9	64.097	64.035
928.3	9	64.034	63.925
928.4	9	63.972	63.814
928.5	9	63.909	63.705
928.6	9	63.825	63.594
928.7	9	63.762	63.485
928.8	9	63.699	63.375
928.9	9	63.657	63.264
929	9	63.636	63.155
929.1	9	63.615	63.131
929.2	9	63.615	63.19
929.3	9	63.636	63.25
929.4	9	63.657	63.311
929.5	9	63.678	63.37
929.6	9	63.699	63.431
929.7	9	63.741	63.49
929.8	9	63.762	63.55
929.9	9	63.762	63.611
930	9	63.762	63.67
930.1	9	63.741	63.669
930.2	9	63.678	63.61
930.3	9	63.594	63.55
930.4	9	63.532	63.489
930.5	9	63.469	63.43
930.6	9	63.385	63.369
930.7	9	63.322	63.31
930.8	9	63.28	63.25
930.9	9	63.238	63.189
931	9	63.238	63.13
931.1	9	63.259	63.131
931.2	9	63.28	63.19
931.3	9	63.322	63.25

931.4	9	63.364	63.311
931.5	9	63.406	63.37
931.6	9	63.448	63.431
931.7	9	63.49	63.49
931.8	9	63.532	63.55
931.9	9	63.574	63.611
932	9	63.594	63.67
932.1	9	63.615	63.69
932.2	9	63.615	63.67
932.3	9	63.636	63.65
932.4	9	63.636	63.63
932.5	9	63.636	63.61
932.6	9	63.657	63.59
932.7	9	63.657	63.57
932.8	9	63.636	63.55
932.9	9	63.615	63.53
933	9	63.594	63.51
933.1	9	63.594	63.474
933.2	9	63.511	63.425
933.3	9	63.469	63.375
933.4	9	63.406	63.325
933.5	9	63.343	63.275
933.6	9	63.343	63.224
933.7	9	63.217	63.175
933.8	9	63.155	63.125
933.9	9	63.071	63.075
934	9	63.071	63.025
934.1	9	63.008	63.005
934.2	9	62.903	63.015
934.3	9	62.84	63.025
934.4	9	62.84	63.035
934.5	9	62.799	63.045
934.6	9	62.736	63.055
934.7	9	62.694	63.065
934.8	9	62.673	63.075
934.9	9	62.673	63.085
935	9	62.673	63.095
935.1	9	62.694	63.095
935.2	9	62.715	63.085
935.3	9	62.715	63.075
935.4	9	62.757	63.065
935.5	9	62.778	63.055
935.6	9	62.819	63.045
935.7	9	62.819	63.035
935.8	9	62.861	63.025

935.9	9	62.903	63.015
936	9	62.924	63.005
936.1	9	62.987	63.015
936.2	9	62.987	63.045
936.3	9	63.008	63.075
936.4	9	63.05	63.105
936.5	9	63.071	63.135
936.6	9	63.092	63.165
936.7	9	63.113	63.195
936.8	9	63.134	63.225
936.9	9	63.155	63.255
937	9	63.176	63.285
937.1	9	63.196	63.305
937.2	9	63.217	63.315
937.3	9	63.238	63.325
937.4	9	63.238	63.335
937.5	9	63.259	63.345
937.6	9	63.259	63.355
937.7	9	63.259	63.365
937.8	9	63.259	63.375
937.9	9	63.259	63.385
938	9	63.238	63.395
938.1	9	63.238	63.395
938.2	9	63.217	63.385
938.3	9	63.217	63.375
938.4	9	63.196	63.365
938.5	9	63.155	63.355
938.6	9	63.134	63.345
938.7	9	63.071	63.335
938.8	9	63.008	63.325
938.9	9	62.945	63.315
939	9	62.882	63.305
939.1	9	62.799	63.259
939.2	9	62.736	63.18
939.3	9	62.652	63.1
939.4	9	62.589	63.019
939.5	9	62.526	62.94
939.6	9	62.463	62.859
939.7	9	62.421	62.78
939.8	9	62.38	62.7
939.9	9	62.359	62.619
940	9	62.338	62.54
940.1	9	62.338	62.5
940.2	9	62.338	62.5
940.3	9	62.338	62.5



940.4	9	62.359	62.5
940.5	9	62.38	62.5
940.6	9	62.401	62.5
940.7	9	62.442	62.5
940.8	9	62.463	62.5
940.9	9	62.505	62.5
941	9	62.526	62.5
941.1	9	62.568	62.52
941.2	9	62.61	62.56
941.3	9	62.631	62.6
941.4	9	62.673	62.64
941.5	9	62.715	62.68
941.6	9	62.757	62.72
941.7	9	62.778	62.76
941.8	9	62.819	62.8
941.9	9	62.861	62.84
942	9	62.882	62.88
942.1	9	62.924	62.895
942.2	9	62.945	62.885
942.3	9	62.945	62.875
942.4	9	62.966	62.865
942.5	9	62.966	62.855
942.6	9	62.945	62.845
942.7	9	62.945	62.835
942.8	9	62.945	62.825
942.9	9	62.861	62.815
943	9	62.819	62.805
943.1	9	62.778	62.769
943.2	9	62.778	62.71
943.3	9	62.631	62.65
943.4	9	62.568	62.589
943.5	9	62.505	62.53
943.6	9	62.505	62.469
943.7	9	62.442	62.41
943.8	9	62.317	62.35
943.9	9	62.254	62.289
944	9	62.254	62.23
944.1	9	62.212	62.21
944.2	9	62.191	62.23
944.3	9	62.191	62.25
944.4	9	62.212	62.27
944.5	9	62.212	62.29
944.6	9	62.233	62.31
944.7	9	62.275	62.33
944.8	9	62.296	62.35

944.9	9	62.296	62.37
945	9	62.338	62.39
945.1	9	62.359	62.395
945.2	9	62.38	62.385
945.3	9	62.442	62.375
945.4	9	62.442	62.365
945.5	9	62.484	62.355
945.6	9	62.505	62.345
945.7	9	62.526	62.335
945.8	9	62.526	62.325
945.9	9	62.526	62.315
946	9	62.526	62.305
946.1	9	62.526	62.3
946.2	9	62.505	62.3
946.3	9	62.505	62.3
946.4	9	62.505	62.3
946.5	9	62.484	62.3
946.6	9	62.484	62.3
946.7	9	62.463	62.3
946.8	9	62.442	62.3
946.9	9	62.421	62.3
947	9	62.401	62.3
947.1	9	62.401	62.305
947.2	9	62.38	62.315
947.3	9	62.359	62.325
947.4	9	62.359	62.335
947.5	9	62.338	62.345
947.6	9	62.317	62.355
947.7	9	62.296	62.365
947.8	9	62.296	62.375
947.9	9	62.275	62.385
948	9	62.254	62.395
948.1	9	62.233	62.385
948.2	9	62.233	62.355
948.3	9	62.191	62.325
948.4	9	62.17	62.295
948.5	9	62.17	62.265
948.6	9	62.149	62.235
948.7	9	62.128	62.205
948.8	9	62.128	62.175
948.9	9	62.128	62.145
949	9	62.128	62.115
949.1	9	62.128	62.12
949.2	9	62.149	62.16
949.3	9	62.17	62.2

949.4	9	62.191	62.24
949.5	9	62.212	62.28
949.6	9	62.254	62.32
949.7	9	62.296	62.36
949.8	9	62.317	62.4
949.9	9	62.359	62.44
950	9	62.401	62.48
950.1	9	62.442	62.515
950.2	9	62.484	62.545
950.3	9	62.526	62.575
950.4	9	62.568	62.605
950.5	9	62.589	62.635
950.6	9	62.61	62.665
950.7	9	62.631	62.695
950.8	9	62.631	62.725
950.9	9	62.631	62.755
951	9	62.631	62.785
951.1	9	62.61	62.774
951.2	9	62.61	62.725
951.3	9	62.568	62.675
951.4	9	62.526	62.625
951.5	9	62.505	62.575
951.6	9	62.463	62.524
951.7	9	62.421	62.475
951.8	9	62.401	62.425
951.9	9	62.401	62.375
952	9	62.38	62.325
952.1	9	62.38	62.3
952.2	9	62.38	62.3
952.3	9	62.38	62.3
952.4	9	62.38	62.3
952.5	9	62.401	62.3
952.6	9	62.421	62.3
952.7	9	62.442	62.3
952.8	9	62.442	62.3
952.9	9	62.484	62.3
953	9	62.526	62.3
953.1	9	62.547	62.305
953.2	9	62.547	62.315
953.3	9	62.568	62.325
953.4	9	62.61	62.335
953.5	9	62.631	62.345
953.6	9	62.631	62.355
953.7	9	62.631	62.365
953.8	9	62.61	62.375

953.9	9	62.568	62.385
954	9	62.568	62.395
954.1	9	62.526	62.375
954.2	9	62.463	62.325
954.3	9	62.338	62.275
954.4	9	62.275	62.225
954.5	9	62.275	62.175
954.6	9	62.254	62.125
954.7	9	62.254	62.075
954.8	9	62.296	62.025
954.9	9	62.296	61.975
955	9	62.317	61.925
955.1	9	62.359	61.946
955.2	9	62.38	62.035
955.3	9	62.421	62.125
955.4	9	62.463	62.216
955.5	9	62.505	62.305
955.6	9	62.547	62.396
955.7	9	62.631	62.485
955.8	9	62.631	62.575
955.9	9	62.673	62.666
956	9	62.694	62.755
956.1	9	62.736	62.8
956.2	9	62.757	62.8
956.3	9	62.799	62.8
956.4	9	62.799	62.8
956.5	9	62.799	62.8
956.6	9	62.819	62.8
956.7	9	62.799	62.8
956.8	9	62.799	62.8
956.9	9	62.778	62.8
957	9	62.778	62.8
957.1	9	62.778	62.774
957.2	9	62.757	62.725
957.3	9	62.757	62.675
957.4	9	62.736	62.625
957.5	9	62.736	62.575
957.6	9	62.715	62.524
957.7	9	62.694	62.475
957.8	9	62.673	62.425
957.9	9	62.673	62.375
958	9	62.652	62.325
958.1	9	62.652	62.326
958.2	9	62.631	62.375
958.3	9	62.631	62.425

958.4	9	62.61	62.475
958.5	9	62.61	62.525
958.6	9	62.61	62.576
958.7	9	62.589	62.625
958.8	9	62.589	62.675
958.9	9	62.568	62.725
959	9	62.568	62.775
959.1	9	62.547	62.78
959.2	9	62.547	62.74
959.3	9	62.526	62.7
959.4	9	62.526	62.66
959.5	9	62.505	62.62
959.6	9	62.484	62.58
959.7	9	62.484	62.54
959.8	9	62.463	62.5
959.9	9	62.442	62.46
960	9	62.421	62.42
960.1	9	62.421	62.385
960.2	9	62.401	62.355
960.3	9	62.38	62.325
960.4	9	62.359	62.295
960.5	9	62.338	62.265
960.6	9	62.317	62.235
960.7	9	62.296	62.205
960.8	9	62.275	62.175
960.9	9	62.254	62.145
961	9	62.254	62.115
961.1	9	62.191	62.09
961.2	9	62.17	62.07
961.3	9	62.149	62.05
961.4	9	62.128	62.03
961.5	9	62.128	62.01
961.6	9	62.065	61.99
961.7	9	62.044	61.97
961.8	9	62.003	61.95
961.9	9	62.003	61.93
962	9	61.94	61.91
962.1	9	61.898	61.895
962.2	9	61.877	61.885
962.3	9	61.877	61.875
962.4	9	61.856	61.865
962.5	9	61.814	61.855
962.6	9	61.814	61.845
962.7	9	61.793	61.835
962.8	9	61.793	61.825

962.9	9	61.793	61.815
963	9	61.772	61.805
963.1	9	61.772	61.815
963.2	9	61.772	61.845
963.3	9	61.772	61.875
963.4	9	61.793	61.905
963.5	9	61.814	61.935
963.6	9	61.814	61.965
963.7	9	61.835	61.995
963.8	9	61.856	62.025
963.9	9	61.898	62.055
964	9	61.898	62.085
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964.2	9	61.94	62.1
964.3	9	61.94	62.1
964.4	9	62.023	62.1
964.5	9	62.023	62.1
964.6	9	62.044	62.1
964.7	9	62.065	62.1
964.8	9	62.065	62.1
964.9	9	62.065	62.1
965	9	62.065	62.1
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965.2	9	62.044	62.1
965.3	9	62.044	62.1
965.4	9	62.044	62.1
965.5	9	62.044	62.1
965.6	9	62.023	62.1
965.7	9	62.023	62.1
965.8	9	62.023	62.1
965.9	9	62.003	62.1
966	9	62.003	62.1
966.1	9	61.982	62.095
966.2	9	61.982	62.085
966.3	9	62.003	62.075
966.4	9	62.023	62.065
966.5	9	62.044	62.055
966.6	9	62.065	62.045
966.7	9	62.107	62.035
966.8	9	62.128	62.025
966.9	9	62.149	62.015
967	9	62.17	62.005
967.1	9	62.191	62.02
967.2	9	62.212	62.06
967.3	9	62.212	62.1

967.4	9	62.212	62.14
967.5	9	62.212	62.18
967.6	9	62.212	62.22
967.7	9	62.212	62.26
967.8	9	62.212	62.3
967.9	9	62.212	62.34
968	9	62.212	62.38
968.1	9	62.212	62.39
968.2	9	62.191	62.37
968.3	9	62.191	62.35
968.4	9	62.191	62.33
968.5	9	62.191	62.31
968.6	9	62.17	62.29
968.7	9	62.17	62.27
968.8	9	62.149	62.25
968.9	9	62.128	62.23
969	9	62.128	62.21
969.1	9	62.107	62.2
969.2	9	62.086	62.2
969.3	9	62.065	62.2
969.4	9	62.044	62.2
969.5	9	62.023	62.2
969.6	9	62.003	62.2
969.7	9	62.003	62.2
969.8	9	61.982	62.2
969.9	9	61.982	62.2
970	9	61.982	62.2
970.1	9	62.003	62.21
970.2	9	62.023	62.23
970.3	9	62.044	62.25
970.4	9	62.065	62.27
970.5	9	62.065	62.29
970.6	9	62.128	62.31
970.7	9	62.149	62.33
970.8	9	62.17	62.35
970.9	9	62.17	62.37
971	9	62.191	62.39
971.1	9	62.233	62.415
971.2	9	62.254	62.445
971.3	9	62.275	62.475
971.4	9	62.275	62.505
971.5	9	62.317	62.535
971.6	9	62.359	62.565
971.7	9	62.38	62.595
971.8	9	62.38	62.625

971.9	9	62.401	62.655
972	9	62.442	62.685
972.1	9	62.484	62.695
972.2	9	62.484	62.685
972.3	9	62.505	62.675
972.4	9	62.547	62.665
972.5	9	62.631	62.655
972.6	9	62.673	62.645
972.7	9	62.673	62.635
972.8	9	62.736	62.625
972.9	9	62.84	62.615
973	9	62.882	62.605
973.1	9	62.882	62.656
973.2	9	62.924	62.765
973.3	9	62.966	62.875
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973.6	9	63.092	63.206
973.7	9	63.134	63.315
973.8	9	63.196	63.425
973.9	9	63.238	63.536
974	9	63.28	63.645
974.1	9	63.322	63.731
974.2	9	63.385	63.79
974.3	9	63.49	63.85
974.4	9	63.49	63.911
974.5	9	63.532	63.97
974.6	9	63.594	64.031
974.7	9	63.636	64.09
974.8	9	63.678	64.15
974.9	9	63.741	64.211
975	9	63.783	64.27
975.1	9	63.846	64.326
975.2	9	63.909	64.375
975.3	9	63.951	64.425
975.4	9	64.013	64.476
975.5	9	64.076	64.525
975.6	9	64.118	64.576
975.7	9	64.181	64.625
975.8	9	64.244	64.675
975.9	9	64.307	64.726
976	9	64.37	64.775
976.1	9	64.432	64.815
976.2	9	64.495	64.845
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976.4	9	64.642	64.905
976.5	9	64.705	64.935
976.6	9	64.788	64.965
976.7	9	64.872	64.995
976.8	9	64.956	65.025
976.9	9	65.019	65.055
977	9	65.124	65.085
977.1	9	65.207	65.141
977.2	9	65.207	65.22
977.3	9	65.375	65.3
977.4	9	65.48	65.381
977.5	9	65.563	65.46
977.6	9	65.647	65.541
977.7	9	65.752	65.62
977.8	9	65.815	65.7
977.9	9	65.899	65.781
978	9	65.961	65.86
978.1	9	66.045	65.91
978.2	9	66.108	65.93
978.3	9	66.192	65.95
978.4	9	66.255	65.97
978.5	9	66.297	65.99
978.6	9	66.359	66.01
978.7	9	66.401	66.03
978.8	9	66.443	66.05
978.9	9	66.485	66.07
979	9	66.527	66.09
979.1	9	66.569	66.146
979.2	9	66.611	66.235
979.3	9	66.674	66.325
979.4	9	66.716	66.416
979.5	9	66.757	66.505
979.6	9	66.757	66.596
979.7	9	66.862	66.685
979.8	9	66.904	66.775
979.9	9	66.946	66.866
980	9	66.988	66.955
980.1	9	66.988	67.01
980.2	9	67.093	67.03
980.3	9	67.134	67.05
980.4	9	67.176	67.07
980.5	9	67.176	67.09
980.6	9	67.239	67.11
980.7	9	67.281	67.13
980.8	9	67.323	67.15

980.9	9	67.323	67.17
981	9	67.365	67.19
981.1	9	67.428	67.215
981.2	9	67.47	67.245
981.3	9	67.512	67.275
981.4	9	67.512	67.305
981.5	9	67.553	67.335
981.6	9	67.616	67.365
981.7	9	67.658	67.395
981.8	9	67.658	67.425
981.9	9	67.7	67.455
982	9	67.721	67.485
982.1	9	67.784	67.541
982.2	9	67.784	67.62
982.3	9	67.805	67.7
982.4	9	67.847	67.781
982.5	9	67.91	67.86
982.6	9	67.93	67.941
982.7	9	67.93	68.02
982.8	9	67.972	68.1
982.9	9	67.993	68.181
983	9	68.056	68.26
983.1	9	68.056	68.3
983.2	9	68.077	68.3
983.3	9	68.119	68.3
983.4	9	68.182	68.3
983.5	9	68.182	68.3
983.6	9	68.203	68.3
983.7	9	68.224	68.3
983.8	9	68.266	68.3
983.9	9	68.328	68.3
984	9	68.328	68.3
984.1	9	68.349	68.326
984.2	9	68.37	68.375
984.3	9	68.412	68.425
984.4	9	68.454	68.476
984.5	9	68.475	68.525
984.6	9	68.517	68.576
984.7	9	68.559	68.625
984.8	9	68.601	68.675
984.9	9	68.643	68.726
985	9	68.685	68.775
985.1	9	68.726	68.815
985.2	9	68.768	68.845
985.3	9	68.831	68.875

985.4	9	68.873	68.905
985.5	9	68.915	68.935
985.6	9	68.978	68.965
985.7	9	69.02	68.995
985.8	9	69.062	69.025
985.9	9	69.124	69.055
986	9	69.187	69.085
986.1	9	69.229	69.115
986.2	9	69.292	69.145
986.3	9	69.355	69.175
986.4	9	69.418	69.205
986.5	9	69.481	69.235
986.6	9	69.543	69.265
986.7	9	69.627	69.295
986.8	9	69.69	69.325
986.9	9	69.774	69.355
987	9	69.858	69.385
987.1	9	69.962	69.517
987.2	9	70.067	69.745
987.3	9	70.172	69.975
987.4	9	70.297	70.207
987.5	9	70.402	70.435
987.6	9	70.528	70.667
987.7	9	70.654	70.895
987.8	9	70.8	71.125
987.9	9	70.926	71.357
988	9	71.052	71.585
988.1	9	71.198	71.72
988.2	9	71.324	71.76
988.3	9	71.47	71.8
988.4	9	71.596	71.84
988.5	9	71.743	71.88
988.6	9	71.91	71.92
988.7	9	72.078	71.96
988.8	9	72.266	72
988.9	9	72.476	72.04
989	9	72.706	72.08
989.1	9	72.916	72.243
989.2	9	72.916	72.52
989.3	9	73.356	72.8
989.4	9	73.565	73.083
989.5	9	73.796	73.36
989.6	9	73.796	73.643
989.7	9	74.215	73.92
989.8	9	74.445	74.2

989.9	9	74.613	74.483
990	9	74.738	74.76
990.1	9	74.738	74.783
990.2	9	74.78	74.555
990.3	9	74.759	74.325
990.4	9	74.717	74.093
990.5	9	74.717	73.865
990.6	9	74.654	73.633
990.7	9	74.508	73.405
990.8	9	74.445	73.175
990.9	9	74.445	72.943
991	9	74.382	72.715
991.1	9	73.858	72.58
991.2	9	73.439	72.54
991.3	9	73.146	72.5
991.4	9	73.146	72.46
991.5	9	72.958	72.42
991.6	9	72.706	72.38
991.7	9	72.644	72.34
991.8	9	72.644	72.3
991.9	9	72.581	72.26
992	9	72.56	72.22
992.1	9	72.539	72.2
992.2	9	72.539	72.2
992.3	9	72.56	72.2
992.4	9	72.56	72.2
992.5	9	72.581	72.2
992.6	9	72.581	72.2
992.7	9	72.581	72.2
992.8	9	72.602	72.2
992.9	9	72.602	72.2
993	9	72.644	72.2
993.1	9	72.644	72.19
993.2	9	72.664	72.17
993.3	9	72.706	72.15
993.4	9	72.706	72.13
993.5	9	72.706	72.11
993.6	9	72.706	72.09
993.7	9	72.685	72.07
993.8	9	72.685	72.05
993.9	9	72.664	72.03
994	9	72.664	72.01
994.1	9	72.664	72.025
994.2	9	72.664	72.075
994.3	9	72.644	72.125

994.4	9	72.644	72.175
994.5	9	72.644	72.225
994.6	9	72.644	72.275
994.7	9	72.664	72.325
994.8	9	72.664	72.375
994.9	9	72.664	72.425
995	9	72.664	72.475
995.1	9	72.685	72.515
995.2	9	72.706	72.545
995.3	9	72.727	72.575
995.4	9	72.769	72.605
995.5	9	72.811	72.635
995.6	9	72.853	72.665
995.7	9	72.874	72.695
995.8	9	72.916	72.725
995.9	9	72.916	72.755
996	9	72.895	72.785
996.1	9	72.874	72.795
996.2	9	72.832	72.785
996.3	9	72.79	72.775
996.4	9	72.727	72.765
996.5	9	72.685	72.755
996.6	9	72.623	72.745
996.7	9	72.56	72.735
996.8	9	72.476	72.725
996.9	9	72.413	72.715
997	9	72.329	72.705
997.1	9	72.266	72.654
997.2	9	72.204	72.565
997.3	9	72.141	72.475
997.4	9	72.078	72.384
997.5	9	72.057	72.295
997.6	9	72.015	72.204
997.7	9	71.973	72.115
997.8	9	71.952	72.025
997.9	9	71.931	71.934
998	9	71.931	71.845
998.1	9	71.952	71.78
998.2	9	71.952	71.74
998.3	9	71.952	71.7
998.4	9	71.952	71.66
998.5	9	71.952	71.62
998.6	9	71.973	71.58
998.7	9	71.973	71.54
998.8	9	71.973	71.5

998.9	9	71.952	71.46
999	9	71.952	71.42
999.1	9	71.952	71.385
999.2	9	71.952	71.355
999.3	9	71.952	71.325
999.4	9	71.931	71.295
999.5	9	71.91	71.265
999.6	9	71.889	71.235
999.7	9	71.889	71.205
999.8	9	71.848	71.175
999.9	9	71.827	71.145
1000	9	71.806	71.115
1000.1	9	71.806	71.1
1000.2	9	71.785	71.1
1000.3	9	71.722	71.1
1000.4	9	71.701	71.1
1000.5	9	71.659	71.1
1000.6	9	71.659	71.1
1000.7	9	71.638	71.1
1000.8	9	71.575	71.1
1000.9	9	71.533	71.1
1001	9	71.533	71.1
1001.1	9	71.491	71.09
1001.2	9	71.47	71.07
1001.3	9	71.387	71.05
1001.4	9	71.387	71.03
1001.5	9	71.366	71.01
1001.6	9	71.324	70.99
1001.7	9	71.261	70.97
1001.8	9	71.219	70.95
1001.9	9	71.219	70.93
1002	9	71.198	70.91
1002.1	9	71.156	70.905
1002.2	9	71.114	70.915
1002.3	9	71.114	70.925
1002.4	9	71.114	70.935
1002.5	9	71.093	70.945
1002.6	9	71.093	70.955
1002.7	9	71.072	70.965
1002.8	9	71.072	70.975
1002.9	9	71.052	70.985
1003	9	71.072	70.995
1003.1	9	71.072	71
1003.2	9	71.072	71
1003.3	9	71.114	71

1003.4	9	71.135	71
1003.5	9	71.177	71
1003.6	9	71.198	71
1003.7	9	71.219	71
1003.8	9	71.24	71
1003.9	9	71.261	71
1004	9	71.282	71
1004.1	9	71.303	71.01
1004.2	9	71.324	71.03
1004.3	9	71.345	71.05
1004.4	9	71.366	71.07
1004.5	9	71.387	71.09
1004.6	9	71.408	71.11
1004.7	9	71.429	71.13
1004.8	9	71.47	71.15
1004.9	9	71.512	71.17
1005	9	71.554	71.19
1005.1	9	71.596	71.246
1005.2	9	71.638	71.335
1005.3	9	71.659	71.425
1005.4	9	71.722	71.516
1005.5	9	71.764	71.605
1005.6	9	71.806	71.696
1005.7	9	71.848	71.785
1005.8	9	71.889	71.875
1005.9	9	71.952	71.966
1006	9	71.994	72.055
1006.1	9	72.036	72.125
1006.2	9	72.099	72.175
1006.3	9	72.141	72.225
1006.4	9	72.204	72.275
1006.5	9	72.266	72.325
1006.6	9	72.308	72.375
1006.7	9	72.371	72.425
1006.8	9	72.434	72.475
1006.9	9	72.476	72.525
1007	9	72.539	72.575
1007.1	9	72.602	72.651
1007.2	9	72.664	72.75
1007.3	9	72.727	72.85
1007.4	9	72.79	72.951
1007.5	9	72.853	73.05
1007.6	9	72.916	73.151
1007.7	9	73	73.25
1007.8	9	73.062	73.35

1007.9	9	73.146	73.451
1008	9	73.251	73.55
1008.1	9	73.356	73.661
1008.2	9	73.46	73.78
1008.3	9	73.586	73.9
1008.4	9	73.586	74.021
1008.5	9	73.858	74.14
1008.6	9	74.005	74.261
1008.7	9	74.173	74.38
1008.8	9	74.173	74.5
1008.9	9	74.319	74.621
1009	9	74.613	74.74
1009.1	9	74.759	74.846
1009.2	9	74.906	74.935
1009.3	9	74.906	75.025
1009.4	9	75.052	75.116
1009.5	9	75.367	75.205
1009.6	9	75.534	75.296
1009.7	9	75.534	75.385
1009.8	9	75.744	75.475
1009.9	9	75.953	75.566
1010	9	76.372	75.655
1010.1	9	76.602	75.782
1010.2	9	76.602	75.94
1010.3	9	76.812	76.1
1010.4	9	77.252	76.262
1010.5	9	77.461	76.42
1010.6	9	77.461	76.582
1010.7	9	77.65	76.74
1010.8	9	77.796	76.9
1010.9	9	78.027	77.062
1011	9	78.153	77.22
1011.1	9	78.153	77.356
1011.2	9	78.257	77.465
1011.3	9	78.362	77.575
1011.4	9	78.592	77.686
1011.5	9	78.592	77.795
1011.6	9	78.718	77.906
1011.7	9	78.823	78.015
1011.8	9	78.928	78.125
1011.9	9	79.116	78.236
1012	9	79.116	78.345
1012.1	9	79.221	78.446
1012.2	9	79.305	78.535
1012.3	9	79.346	78.625



1012.4	9	79.388	78.716
1012.5	9	79.409	78.805
1012.6	9	79.409	78.896
1012.7	9	79.409	78.985
1012.8	9	79.409	79.075
1012.9	9	79.43	79.166
1013	9	79.409	79.255
1013.1	9	79.367	79.244
1013.2	9	79.305	79.135
1013.3	9	79.221	79.025
1013.4	9	79.137	78.914
1013.5	9	79.053	78.805
1013.6	9	78.969	78.694
1013.7	9	78.865	78.585
1013.8	9	78.76	78.475
1013.9	9	78.655	78.364
1014	9	78.53	78.255
1014.1	9	78.404	78.088
1014.2	9	78.236	77.87
1014.3	9	78.069	77.65
1014.4	9	77.859	77.428
1014.5	9	77.671	77.21
1014.6	9	77.482	76.988
1014.7	9	77.294	76.77
1014.8	9	77.105	76.55
1014.9	9	76.959	76.328
1015	9	76.833	76.11
1015.1	9	76.707	75.98
1015.2	9	76.582	75.94
1015.3	9	76.477	75.9
1015.4	9	76.351	75.86
1015.5	9	76.246	75.82
1015.6	9	76.142	75.78
1015.7	9	76.058	75.74
1015.8	9	75.974	75.7
1015.9	9	75.911	75.66
1016	9	75.89	75.62
1016.1	9	75.89	75.641
1016.2	9	75.89	75.72
1016.3	9	75.911	75.8
1016.4	9	75.953	75.881
1016.5	9	75.974	75.96
1016.6	9	76.016	76.041
1016.7	9	76.058	76.12
1016.8	9	76.1	76.2

1016.9	9	76.163	76.281
1017	9	76.204	76.36
1017.1	9	76.267	76.461
1017.2	9	76.267	76.58
1017.3	9	76.372	76.7
1017.4	9	76.456	76.821
1017.5	9	76.519	76.94
1017.6	9	76.602	77.061
1017.7	9	76.602	77.18
1017.8	9	76.749	77.3
1017.9	9	76.833	77.421
1018	9	76.917	77.54
1018.1	9	76.917	77.62
1018.2	9	77	77.66
1018.3	9	77.147	77.7
1018.4	9	77.252	77.74
1018.5	9	77.336	77.78
1018.6	9	77.336	77.82
1018.7	9	77.545	77.86
1018.8	9	77.65	77.9
1018.9	9	77.775	77.94
1019	9	77.775	77.98
1019.1	9	77.88	78.056
1019.2	9	78.111	78.165
1019.3	9	78.215	78.275
1019.4	9	78.32	78.386
1019.5	9	78.32	78.495
1019.6	9	78.425	78.606
1019.7	9	78.634	78.715
1019.8	9	78.697	78.825
1019.9	9	78.697	78.936
1020	9	78.739	79.045
1020.1	9	78.781	79.12
1020.2	9	78.844	79.16
1020.3	9	78.844	79.2
1020.4	9	78.886	79.24
1020.5	9	78.948	79.28
1020.6	9	78.99	79.32
1020.7	9	79.074	79.36
1020.8	9	79.074	79.4
1020.9	9	79.137	79.44
1021	9	79.179	79.48
1021.1	9	79.221	79.52
1021.2	9	79.263	79.56
1021.3	9	79.305	79.6

1021.4	9	79.346	79.64
1021.5	9	79.409	79.68
1021.6	9	79.514	79.72
1021.7	9	79.514	79.76
1021.8	9	79.556	79.8
1021.9	9	79.619	79.84
1022	9	79.661	79.88
1022.1	9	79.724	79.9
1022.2	9	79.765	79.9
1022.3	9	79.828	79.9
1022.4	9	79.891	79.9
1022.5	9	79.933	79.9
1022.6	9	79.996	79.9
1022.7	9	80.038	79.9
1022.8	9	80.101	79.9
1022.9	9	80.142	79.9
1023	9	80.163	79.9
1023.1	9	80.205	79.92
1023.2	9	80.226	79.96
1023.3	9	80.268	80
1023.4	9	80.31	80.04
1023.5	9	80.352	80.08
1023.6	9	80.373	80.12
1023.7	9	80.415	80.16
1023.8	9	80.457	80.2
1023.9	9	80.478	80.24
1024	9	80.52	80.28
1024.1	9	80.54	80.3
1024.2	9	80.561	80.3
1024.3	9	80.603	80.3
1024.4	9	80.645	80.3
1024.5	9	80.666	80.3
1024.6	9	80.666	80.3
1024.7	9	80.666	80.3
1024.8	9	80.666	80.3
1024.9	9	80.666	80.3
1025	9	80.666	80.3
1025.1	9	80.645	80.259
1025.2	9	80.645	80.18
1025.3	9	80.603	80.1
1025.4	9	80.582	80.019
1025.5	9	80.561	79.94
1025.6	9	80.52	79.859
1025.7	9	80.499	79.78
1025.8	9	80.478	79.7

1025.9	9	80.478	79.619
1026	9	80.478	79.54
1026.1	9	80.499	79.5
1026.2	9	80.499	79.5
1026.3	9	80.499	79.5
1026.4	9	80.499	79.5
1026.5	9	80.478	79.5
1026.6	9	80.436	79.5
1026.7	9	80.394	79.5
1026.8	9	80.394	79.5
1026.9	9	80.289	79.5
1027	9	80.205	79.5
1027.1	9	80.122	79.48
1027.2	9	80.017	79.44
1027.3	9	79.912	79.4
1027.4	9	79.807	79.36
1027.5	9	79.703	79.32
1027.6	9	79.577	79.28
1027.7	9	79.577	79.24
1027.8	9	79.388	79.2
1027.9	9	79.305	79.16
1028	9	79.2	79.12
1028.1	9	79.2	79.08
1028.2	9	79.116	79.04
1028.3	9	78.948	79
1028.4	9	78.886	78.96
1028.5	9	78.886	78.92
1028.6	9	78.802	78.88
1028.7	9	78.655	78.84
1028.8	9	78.571	78.8
1028.9	9	78.467	78.76
1029	9	78.467	78.72
1029.1	9	78.383	78.644
1029.2	9	78.173	78.535
1029.3	9	78.069	78.425
1029.4	9	78.069	78.314
1029.5	9	77.964	78.205
1029.6	9	77.838	78.094
1029.7	9	77.608	77.985
1029.8	9	77.608	77.875
1029.9	9	77.482	77.764
1030	9	77.357	77.655
1030.1	9	77.126	77.544
1030.2	9	77.021	77.435
1030.3	9	77.021	77.325

1030.4	9	76.896	77.214
1030.5	9	76.77	77.105
1030.6	9	76.54	76.994
1030.7	9	76.54	76.885
1030.8	9	76.414	76.775
1030.9	9	76.309	76.664
1031	9	76.184	76.555
1031.1	9	76.079	76.388
1031.2	9	75.953	76.17
1031.3	9	75.848	75.95
1031.4	9	75.702	75.728
1031.5	9	75.555	75.51
1031.6	9	75.408	75.288
1031.7	9	75.22	75.07
1031.8	9	75.052	74.85
1031.9	9	74.864	74.628
1032	9	74.696	74.41
1032.1	9	74.508	74.213
1032.2	9	74.34	74.045
1032.3	9	74.173	73.875
1032.4	9	73.984	73.703
1032.5	9	73.775	73.535
1032.6	9	73.565	73.363
1032.7	9	73.335	73.195
1032.8	9	73.125	73.025
1032.9	9	72.916	72.853
1033	9	72.685	72.685
1033.1	9	72.455	72.508
1033.2	9	72.204	72.33
1033.3	9	71.973	72.15
1033.4	9	71.743	71.968
1033.5	9	71.512	71.79
1033.6	9	71.282	71.608
1033.7	9	71.052	71.43
1033.8	9	70.863	71.25
1033.9	9	70.675	71.068
1034	9	70.486	70.89
1034.1	9	70.297	70.637
1034.2	9	70.088	70.32
1034.3	9	69.816	70
1034.4	9	69.522	69.677
1034.5	9	69.208	69.36
1034.6	9	68.894	69.037
1034.7	9	68.664	68.72
1034.8	9	68.496	68.4

1034.9	9	68.349	68.077
1035	9	68.224	67.76
1035.1	9	68.077	67.539
1035.2	9	67.972	67.42
1035.3	9	67.847	67.3
1035.4	9	67.742	67.179
1035.5	9	67.637	67.06
1035.6	9	67.532	66.939
1035.7	9	67.428	66.82
1035.8	9	67.344	66.7
1035.9	9	67.26	66.579
1036	9	67.218	66.46
1036.1	9	67.197	66.415
1036.2	9	67.176	66.445
1036.3	9	67.176	66.475
1036.4	9	67.176	66.505
1036.5	9	67.197	66.535
1036.6	9	67.197	66.565
1036.7	9	67.218	66.595
1036.8	9	67.218	66.625
1036.9	9	67.239	66.655
1037	9	67.239	66.685
1037.1	9	67.218	66.669
1037.2	9	67.218	66.61
1037.3	9	67.114	66.55
1037.4	9	67.051	66.489
1037.5	9	66.988	66.43
1037.6	9	66.904	66.369
1037.7	9	66.904	66.31
1037.8	9	66.757	66.25
1037.9	9	66.653	66.189
1038	9	66.569	66.13
1038.1	9	66.569	66.09
1038.2	9	66.464	66.07
1038.3	9	66.276	66.05
1038.4	9	66.213	66.03
1038.5	9	66.213	66.01
1038.6	9	66.15	65.99
1038.7	9	66.108	65.97
1038.8	9	66.045	65.95
1038.9	9	66.024	65.93
1039	9	66.024	65.91
1039.1	9	66.024	65.915
1039.2	9	66.024	65.945
1039.3	9	66.003	65.975

1039.4	9	66.003	66.005
1039.5	9	66.003	66.035
1039.6	9	66.024	66.065
1039.7	9	66.066	66.095
1039.8	9	66.066	66.125
1039.9	9	66.108	66.155
1040	9	66.129	66.185
1040.1	9	66.15	66.195
1040.2	9	66.213	66.185
1040.3	9	66.213	66.175
1040.4	9	66.255	66.165
1040.5	9	66.276	66.155
1040.6	9	66.318	66.145
1040.7	9	66.359	66.135
1040.8	9	66.401	66.125
1040.9	9	66.443	66.115
1041	9	66.485	66.105
1041.1	9	66.548	66.151
1041.2	9	66.59	66.25
1041.3	9	66.632	66.35
1041.4	9	66.674	66.451
1041.5	9	66.716	66.55
1041.6	9	66.778	66.651
1041.7	9	66.82	66.75
1041.8	9	66.862	66.85
1041.9	9	66.904	66.951
1042	9	66.946	67.05
1042.1	9	66.988	67.115
1042.2	9	66.988	67.145
1042.3	9	67.072	67.175
1042.4	9	67.114	67.205
1042.5	9	67.155	67.235
1042.6	9	67.197	67.265
1042.7	9	67.239	67.295
1042.8	9	67.281	67.325
1042.9	9	67.323	67.355
1043	9	67.365	67.385
1043.1	9	67.407	67.446
1043.2	9	67.428	67.535
1043.3	9	67.491	67.625
1043.4	9	67.512	67.716
1043.5	9	67.553	67.805
1043.6	9	67.595	67.896
1043.7	9	67.637	67.985
1043.8	9	67.679	68.075

1043.9	9	67.721	68.166
1044	9	67.763	68.255
1044.1	9	67.805	68.3
1044.2	9	67.847	68.3
1044.3	9	67.889	68.3
1044.4	9	67.93	68.3
1044.5	9	67.972	68.3
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1044.7	9	68.056	68.3
1044.8	9	68.098	68.3
1044.9	9	68.161	68.3
1045	9	68.203	68.3
1045.1	9	68.245	68.32
1045.2	9	68.287	68.36
1045.3	9	68.328	68.4
1045.4	9	68.349	68.44
1045.5	9	68.391	68.48
1045.6	9	68.433	68.52
1045.7	9	68.454	68.56
1045.8	9	68.475	68.6
1045.9	9	68.496	68.64
1046	9	68.517	68.68
1046.1	9	68.538	68.674
1046.2	9	68.559	68.625
1046.3	9	68.58	68.575
1046.4	9	68.58	68.524
1046.5	9	68.601	68.475
1046.6	9	68.601	68.424
1046.7	9	68.601	68.375
1046.8	9	68.58	68.325
1046.9	9	68.58	68.274
1047	9	68.559	68.225
1047.1	9	68.538	68.195
1047.2	9	68.517	68.185
1047.3	9	68.517	68.175
1047.4	9	68.517	68.165
1047.5	9	68.496	68.155
1047.6	9	68.454	68.145
1047.7	9	68.454	68.135
1047.8	9	68.433	68.125
1047.9	9	68.391	68.115
1048	9	68.37	68.105
1048.1	9	68.37	68.095
1048.2	9	68.37	68.085
1048.3	9	68.349	68.075



1048.4	9	68.328	68.065
1048.5	9	68.266	68.055
1048.6	9	68.266	68.045
1048.7	9	68.203	68.035
1048.8	9	68.14	68.025
1048.9	9	67.993	68.015
1049	9	67.91	68.005
1049.1	9	67.91	67.954
1049.2	9	67.805	67.865
1049.3	9	67.7	67.775
1049.4	9	67.532	67.684
1049.5	9	67.532	67.595
1049.6	9	67.449	67.504
1049.7	9	67.365	67.415
1049.8	9	67.281	67.325
1049.9	9	67.134	67.234
1050	9	67.134	67.145
1050.1	9	67.072	67.064
1050.2	9	66.988	66.995
1050.3	9	66.925	66.925
1050.4	9	66.841	66.854
1050.5	9	66.778	66.785
1050.6	9	66.695	66.714
1050.7	9	66.611	66.645
1050.8	9	66.548	66.575
1050.9	9	66.464	66.504
1051	9	66.401	66.435
1051.1	9	66.339	66.385
1051.2	9	66.318	66.355
1051.3	9	66.276	66.325
1051.4	9	66.276	66.295
1051.5	9	66.255	66.265
1051.6	9	66.234	66.235
1051.7	9	66.213	66.205
1051.8	9	66.192	66.175
1051.9	9	66.171	66.145
1052	9	66.171	66.115
1052.1	9	66.15	66.08
1052.2	9	66.15	66.04
1052.3	9	66.15	66
1052.4	9	66.15	65.96
1052.5	9	66.171	65.92
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1053.1	9	66.339	65.715
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1053.4	9	66.464	65.805
1053.5	9	66.527	65.835
1053.6	9	66.569	65.865
1053.7	9	66.611	65.895
1053.8	9	66.632	65.925
1053.9	9	66.653	65.955
1054	9	66.674	65.985
1054.1	9	66.674	66.02
1054.2	9	66.674	66.06
1054.3	9	66.674	66.1
1054.4	9	66.674	66.14
1054.5	9	66.653	66.18
1054.6	9	66.653	66.22
1054.7	9	66.632	66.26
1054.8	9	66.632	66.3
1054.9	9	66.611	66.34
1055	9	66.59	66.38
1055.1	9	66.59	66.38
1055.2	9	66.569	66.34
1055.3	9	66.548	66.3
1055.4	9	66.548	66.26
1055.5	9	66.527	66.22
1055.6	9	66.506	66.18
1055.7	9	66.506	66.14
1055.8	9	66.527	66.1
1055.9	9	66.527	66.06
1056	9	66.548	66.02
1056.1	9	66.569	66.015
1056.2	9	66.569	66.045
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1056.4	9	66.653	66.105
1056.5	9	66.674	66.135
1056.6	9	66.674	66.165
1056.7	9	66.695	66.195
1056.8	9	66.757	66.225
1056.9	9	66.778	66.255
1057	9	66.778	66.285
1057.1	9	66.82	66.336
1057.2	9	66.841	66.405
1057.3	9	66.925	66.475

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1057.5	9	66.946	66.615
1057.6	9	66.988	66.686
1057.7	9	67.03	66.755
1057.8	9	67.093	66.825
1057.9	9	67.114	66.896
1058	9	67.114	66.965
1058.1	9	67.134	67.025
1058.2	9	67.176	67.075
1058.3	9	67.218	67.125
1058.4	9	67.218	67.175
1058.5	9	67.26	67.225
1058.6	9	67.302	67.275
1058.7	9	67.386	67.325
1058.8	9	67.386	67.375
1058.9	9	67.428	67.425
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1059.1	9	67.491	67.52
1059.2	9	67.574	67.56
1059.3	9	67.574	67.6
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1059.5	9	67.658	67.68
1059.6	9	67.7	67.72
1059.7	9	67.742	67.76
1059.8	9	67.784	67.8
1059.9	9	67.826	67.84
1060	9	67.868	67.88
1060.1	9	67.91	67.91
1060.2	9	67.951	67.93
1060.3	9	67.993	67.95
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1060.8	9	68.182	68.05
1060.9	9	68.224	68.07
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1061.8	9	68.58	68.4

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1062.2	9	68.706	68.56
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1062.5	9	68.81	68.68
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1062.7	9	68.894	68.76
1062.8	9	68.915	68.8
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1063.2	9	69.02	68.855
1063.3	9	69.041	68.825
1063.4	9	69.083	68.795
1063.5	9	69.103	68.765
1063.6	9	69.124	68.735
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1063.8	9	69.187	68.675
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1064.8	9	69.501	69.2
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1065	9	69.543	69.36
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1065.2	9	69.564	69.4
1065.3	9	69.585	69.4
1065.4	9	69.585	69.4
1065.5	9	69.627	69.4
1065.6	9	69.648	69.4
1065.7	9	69.648	69.4
1065.8	9	69.648	69.4
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1066.3	9	69.774	69.4

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1068	9	70.193	69.97
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1068.2	9	70.235	70.06
1068.3	9	70.297	70.1
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1068.6	9	70.339	70.22
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1068.8	9	70.402	70.3
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1069.7	9	70.633	70.53
1069.8	9	70.675	70.55
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1070.2	9	70.779	70.645
1070.3	9	70.8	70.675
1070.4	9	70.821	70.705
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1070.6	9	70.842	70.765
1070.7	9	70.863	70.795
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1071.8	9	70.842	70.45
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1073.5	9	70.947	70.465
1073.6	9	70.926	70.435
1073.7	9	70.926	70.405
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1076	9	70.256	69.89
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1078	9	70.088	69.625
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1080.2	9	69.564	69.87
1080.3	9	69.564	69.85
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1080.6	9	69.585	69.79
1080.7	9	69.606	69.77
1080.8	9	69.606	69.75
1080.9	9	69.627	69.73
1081	9	69.627	69.71
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1081.2	9	69.648	69.67
1081.3	9	69.669	69.65
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1081.5	9	69.69	69.61
1081.6	9	69.69	69.59
1081.7	9	69.711	69.57
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1081.9	9	69.711	69.53
1082	9	69.732	69.51
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1083.2	9	69.92	69.945
1083.3	9	69.941	69.975
1083.4	9	69.962	70.005
1083.5	9	69.983	70.035
1083.6	9	70.004	70.065
1083.7	9	70.004	70.095
1083.8	9	70.025	70.125
1083.9	9	70.046	70.155
1084	9	70.046	70.185
1084.1	9	70.088	70.2
1084.2	9	70.088	70.2
1084.3	9	70.109	70.2



1084.4	9	70.109	70.2
1084.5	9	70.13	70.2
1084.6	9	70.172	70.2
1084.7	9	70.193	70.2
1084.8	9	70.193	70.2
1084.9	9	70.193	70.2
1085	9	70.235	70.2
1085.1	9	70.256	70.2
1085.2	9	70.256	70.2
1085.3	9	70.256	70.2
1085.4	9	70.277	70.2
1085.5	9	70.297	70.2
1085.6	9	70.318	70.2
1085.7	9	70.318	70.2
1085.8	9	70.339	70.2
1085.9	9	70.36	70.2
1086	9	70.381	70.2
1086.1	9	70.402	70.241
1086.2	9	70.402	70.32
1086.3	9	70.423	70.4
1086.4	9	70.465	70.481
1086.5	9	70.507	70.56
1086.6	9	70.507	70.641
1086.7	9	70.549	70.72
1086.8	9	70.57	70.8
1086.9	9	70.612	70.881
1087	9	70.612	70.96
1087.1	9	70.633	70.99
1087.2	9	70.654	70.97
1087.3	9	70.654	70.95
1087.4	9	70.695	70.93
1087.5	9	70.695	70.91
1087.6	9	70.716	70.89
1087.7	9	70.716	70.87
1087.8	9	70.737	70.85
1087.9	9	70.758	70.83
1088	9	70.779	70.81
1088.1	9	70.8	70.805
1088.2	9	70.8	70.815
1088.3	9	70.821	70.825
1088.4	9	70.842	70.835
1088.5	9	70.863	70.845
1088.6	9	70.863	70.855
1088.7	9	70.884	70.865
1088.8	9	70.905	70.875

1088.9	9	70.905	70.885
1089	9	70.926	70.895
1089.1	9	70.947	70.89
1089.2	9	70.947	70.87
1089.3	9	70.968	70.85
1089.4	9	70.989	70.83
1089.5	9	71.01	70.81
1089.6	9	71.01	70.79
1089.7	9	71.031	70.77
1089.8	9	71.052	70.75
1089.9	9	71.072	70.73
1090	9	71.072	70.71
1090.1	9	71.093	70.71
1090.2	9	71.114	70.73
1090.3	9	71.135	70.75
1090.4	9	71.156	70.77
1090.5	9	71.177	70.79
1090.6	9	71.198	70.81
1090.7	9	71.219	70.83
1090.8	9	71.24	70.85
1090.9	9	71.261	70.87
1091	9	71.282	70.89
1091.1	9	71.282	70.915
1091.2	9	71.303	70.945
1091.3	9	71.324	70.975
1091.4	9	71.345	71.005
1091.5	9	71.366	71.035
1091.6	9	71.387	71.065
1091.7	9	71.408	71.095
1091.8	9	71.429	71.125
1091.9	9	71.45	71.155
1092	9	71.47	71.185
1092.1	9	71.47	71.205
1092.2	9	71.491	71.215
1092.3	9	71.512	71.225
1092.4	9	71.512	71.235
1092.5	9	71.512	71.245
1092.6	9	71.512	71.255
1092.7	9	71.512	71.265
1092.8	9	71.491	71.275
1092.9	9	71.47	71.285
1093	9	71.47	71.295
1093.1	9	71.45	71.275
1093.2	9	71.429	71.225
1093.3	9	71.408	71.175

1093.4	9	71.387	71.125
1093.5	9	71.387	71.075
1093.6	9	71.387	71.025
1093.7	9	71.387	70.975
1093.8	9	71.408	70.925
1093.9	9	71.429	70.875
1094	9	71.429	70.825
1094.1	9	71.45	70.82
1094.2	9	71.47	70.86
1094.3	9	71.491	70.9
1094.4	9	71.533	70.94
1094.5	9	71.533	70.98
1094.6	9	71.554	71.02
1094.7	9	71.596	71.06
1094.8	9	71.617	71.1
1094.9	9	71.617	71.14
1095	9	71.638	71.18
1095.1	9	71.659	71.225
1095.2	9	71.68	71.275
1095.3	9	71.701	71.325
1095.4	9	71.701	71.375
1095.5	9	71.722	71.425
1095.6	9	71.764	71.475
1095.7	9	71.785	71.525
1095.8	9	71.785	71.575
1095.9	9	71.806	71.625
1096	9	71.827	71.675
1096.1	9	71.868	71.71
1096.2	9	71.868	71.73
1096.3	9	71.868	71.75
1096.4	9	71.889	71.77
1096.5	9	71.91	71.79
1096.6	9	71.952	71.81
1096.7	9	71.952	71.83
1096.8	9	71.952	71.85
1096.9	9	71.973	71.87
1097	9	71.994	71.89
1097.1	9	72.015	71.936
1097.2	9	72.036	72.005
1097.3	9	72.057	72.075
1097.4	9	72.057	72.146
1097.5	9	72.099	72.215
1097.6	9	72.099	72.286
1097.7	9	72.12	72.355
1097.8	9	72.141	72.425

1097.9	9	72.162	72.496
1098	9	72.162	72.565
1098.1	9	72.183	72.585
1098.2	9	72.204	72.555
1098.3	9	72.225	72.525
1098.4	9	72.246	72.495
1098.5	9	72.246	72.465
1098.6	9	72.266	72.435
1098.7	9	72.287	72.405
1098.8	9	72.308	72.375
1098.9	9	72.329	72.345
1099	9	72.329	72.315
1099.1	9	72.35	72.3
1099.2	9	72.371	72.3
1099.3	9	72.392	72.3
1099.4	9	72.413	72.3
1099.5	9	72.413	72.3
1099.6	9	72.434	72.3
1099.7	9	72.455	72.3
1099.8	9	72.476	72.3
1099.9	9	72.476	72.3
1100	9	72.497	72.3
1100.1	9	72.518	72.29
1100.2	9	72.518	72.27
1100.3	9	72.539	72.25
1100.4	9	72.56	72.23
1100.5	9	72.56	72.21
1100.6	9	72.581	72.19
1100.7	9	72.602	72.17
1100.8	9	72.602	72.15
1100.9	9	72.623	72.13
1101	9	72.644	72.11
1101.1	9	72.644	72.095
1101.2	9	72.664	72.085
1101.3	9	72.664	72.075
1101.4	9	72.685	72.065
1101.5	9	72.685	72.055
1101.6	9	72.685	72.045
1101.7	9	72.685	72.035
1101.8	9	72.685	72.025
1101.9	9	72.664	72.015
1102	9	72.664	72.005
1102.1	9	72.644	71.995
1102.2	9	72.644	71.985
1102.3	9	72.644	71.975

1102.4	9	72.644	71.965
1102.5	9	72.644	71.955
1102.6	9	72.664	71.945
1102.7	9	72.664	71.935
1102.8	9	72.685	71.925
1102.9	9	72.685	71.915
1103	9	72.706	71.905
1103.1	9	72.706	71.936
1103.2	9	72.727	72.005
1103.3	9	72.727	72.075
1103.4	9	72.748	72.146
1103.5	9	72.769	72.215
1103.6	9	72.769	72.286
1103.7	9	72.79	72.355
1103.8	9	72.79	72.425
1103.9	9	72.79	72.496
1104	9	72.811	72.565
1104.1	9	72.832	72.61
1104.2	9	72.832	72.63
1104.3	9	72.832	72.65
1104.4	9	72.853	72.67
1104.5	9	72.853	72.69
1104.6	9	72.874	72.71
1104.7	9	72.874	72.73
1104.8	9	72.874	72.75
1104.9	9	72.874	72.77
1105	9	72.874	72.79
1105.1	9	72.874	72.82
1105.2	9	72.874	72.86
1105.3	9	72.874	72.9
1105.4	9	72.874	72.94
1105.5	9	72.874	72.98
1105.6	9	72.874	73.02
1105.7	9	72.874	73.06
1105.8	9	72.874	73.1
1105.9	9	72.874	73.14
1106	9	72.874	73.18
1106.1	9	72.853	73.144
1106.2	9	72.832	73.035
1106.3	9	72.769	72.925
1106.4	9	72.769	72.814
1106.5	9	72.706	72.705
1106.6	9	72.664	72.594
1106.7	9	72.581	72.485
1106.8	9	72.434	72.375

1106.9	9	72.434	72.264
1107	9	72.35	72.155
1107.1	9	72.35	72.069
1107.2	9	72.183	72.01
1107.3	9	72.078	71.95
1107.4	9	71.994	71.889
1107.5	9	71.91	71.83
1107.6	9	71.848	71.769
1107.7	9	71.785	71.71
1107.8	9	71.722	71.65
1107.9	9	71.68	71.589
1108	9	71.638	71.53
1108.1	9	71.575	71.469
1108.2	9	71.533	71.41
1108.3	9	71.47	71.35
1108.4	9	71.429	71.289
1108.5	9	71.345	71.23
1108.6	9	71.261	71.169
1108.7	9	71.177	71.11
1108.8	9	71.093	71.05
1108.9	9	71.031	70.989
1109	9	70.989	70.93
1109.1	9	70.947	70.875
1109.2	9	70.905	70.825
1109.3	9	70.863	70.775
1109.4	9	70.821	70.725
1109.5	9	70.8	70.675
1109.6	9	70.758	70.625
1109.7	9	70.716	70.575
1109.8	9	70.675	70.525
1109.9	9	70.633	70.475
1110	9	70.591	70.425
1110.1	9	70.57	70.405
1110.2	9	70.528	70.415
1110.3	9	70.486	70.425
1110.4	9	70.465	70.435
1110.5	9	70.465	70.445
1110.6	9	70.465	70.455
1110.7	9	70.486	70.465
1110.8	9	70.486	70.475
1110.9	9	70.507	70.485
1111	9	70.528	70.495
1111.1	9	70.549	70.52
1111.2	9	70.57	70.56
1111.3	9	70.57	70.6

1111.4	9	70.612	70.64
1111.5	9	70.633	70.68
1111.6	9	70.654	70.72
1111.7	9	70.675	70.76
1111.8	9	70.695	70.8
1111.9	9	70.695	70.84
1112	9	70.695	70.88
1112.1	9	70.695	70.864
1112.2	9	70.675	70.795
1112.3	9	70.654	70.725
1112.4	9	70.654	70.654
1112.5	9	70.633	70.585
1112.6	9	70.633	70.514
1112.7	9	70.591	70.445
1112.8	9	70.549	70.375
1112.9	9	70.528	70.304
1113	9	70.528	70.235
1113.1	9	70.528	70.241
1113.2	9	70.507	70.32
1113.3	9	70.507	70.4
1113.4	9	70.507	70.481
1113.5	9	70.528	70.56
1113.6	9	70.528	70.641
1113.7	9	70.549	70.72
1113.8	9	70.549	70.8
1113.9	9	70.549	70.881
1114	9	70.57	70.96
1114.1	9	70.591	70.959
1114.2	9	70.612	70.88
1114.3	9	70.612	70.8
1114.4	9	70.612	70.719
1114.5	9	70.633	70.64
1114.6	9	70.633	70.559
1114.7	9	70.633	70.48
1114.8	9	70.633	70.4
1114.9	9	70.633	70.319
1115	9	70.633	70.24
1115.1	9	70.633	70.205
1115.2	9	70.633	70.215
1115.3	9	70.612	70.225
1115.4	9	70.612	70.235
1115.5	9	70.591	70.245
1115.6	9	70.57	70.255
1115.7	9	70.57	70.265
1115.8	9	70.549	70.275

1115.9	9	70.528	70.285
1116	9	70.486	70.295
1116.1	9	70.444	70.239
1116.2	9	70.402	70.12
1116.3	9	70.339	70
1116.4	9	70.277	69.879
1116.5	9	70.235	69.76
1116.6	9	70.172	69.639
1116.7	9	70.088	69.52
1116.8	9	70.046	69.4
1116.9	9	69.962	69.279
1117	9	69.899	69.16
1117.1	9	69.837	69.085
1117.2	9	69.753	69.055
1117.3	9	69.669	69.025
1117.4	9	69.606	68.995
1117.5	9	69.543	68.965
1117.6	9	69.481	68.935
1117.7	9	69.418	68.905
1117.8	9	69.376	68.875
1117.9	9	69.334	68.845
1118	9	69.292	68.815
1118.1	9	69.271	68.769
1118.2	9	69.229	68.71
1118.3	9	69.187	68.65
1118.4	9	69.145	68.589
1118.5	9	69.083	68.53
1118.6	9	69.02	68.469
1118.7	9	68.936	68.41
1118.8	9	68.873	68.35
1118.9	9	68.81	68.289
1119	9	68.747	68.23
1119.1	9	68.685	68.205
1119.2	9	68.643	68.215
1119.3	9	68.601	68.225
1119.4	9	68.58	68.235
1119.5	9	68.559	68.245
1119.6	9	68.559	68.255
1119.7	9	68.538	68.265
1119.8	9	68.517	68.275
1119.9	9	68.517	68.285
1120	9	68.496	68.295
1120.1	9	68.496	68.295
1120.2	9	68.496	68.285
1120.3	9	68.475	68.275



1120.4	9	68.454	68.265
1120.5	9	68.454	68.255
1120.6	9	68.433	68.245
1120.7	9	68.412	68.235
1120.8	9	68.37	68.225
1120.9	9	68.349	68.215
1121	9	68.308	68.205
1121.1	9	68.287	68.174
1121.2	9	68.245	68.125
1121.3	9	68.224	68.075
1121.4	9	68.224	68.024
1121.5	9	68.14	67.975
1121.6	9	68.119	67.924
1121.7	9	68.077	67.875
1121.8	9	68.035	67.825
1121.9	9	68.035	67.774
1122	9	67.972	67.725
1122.1	9	67.951	67.68
1122.2	9	67.91	67.64
1122.3	9	67.91	67.6
1122.4	9	67.847	67.56
1122.5	9	67.826	67.52
1122.6	9	67.784	67.48
1122.7	9	67.784	67.44
1122.8	9	67.763	67.4
1122.9	9	67.7	67.36
1123	9	67.658	67.32
1123.1	9	67.616	67.31
1123.2	9	67.616	67.33
1123.3	9	67.595	67.35
1123.4	9	67.553	67.37
1123.5	9	67.532	67.39
1123.6	9	67.532	67.41
1123.7	9	67.491	67.43
1123.8	9	67.47	67.45
1123.9	9	67.428	67.47
1124	9	67.428	67.49
1124.1	9	67.407	67.505
1124.2	9	67.407	67.515
1124.3	9	67.386	67.525
1124.4	9	67.365	67.535
1124.5	9	67.365	67.545
1124.6	9	67.365	67.555
1124.7	9	67.344	67.565
1124.8	9	67.344	67.575

1124.9	9	67.344	67.585
1125	9	67.344	67.595
1125.1	9	67.344	67.6
1125.2	9	67.365	67.6
1125.3	9	67.428	67.6
1125.4	9	67.428	67.6
1125.5	9	67.449	67.6
1125.6	9	67.47	67.6
1125.7	9	67.491	67.6
1125.8	9	67.512	67.6
1125.9	9	67.512	67.6
1126	9	67.512	67.6
1126.1	9	67.512	67.58
1126.2	9	67.512	67.54
1126.3	9	67.512	67.5
1126.4	9	67.512	67.46
1126.5	9	67.512	67.42
1126.6	9	67.491	67.38
1126.7	9	67.491	67.34
1126.8	9	67.491	67.3
1126.9	9	67.491	67.26
1127	9	67.491	67.22
1127.1	9	67.491	67.19
1127.2	9	67.47	67.17
1127.3	9	67.47	67.15
1127.4	9	67.47	67.13
1127.5	9	67.47	67.11
1127.6	9	67.47	67.09
1127.7	9	67.449	67.07
1127.8	9	67.449	67.05
1127.9	9	67.428	67.03
1128	9	67.428	67.01
1128.1	9	67.407	66.964
1128.2	9	67.407	66.895
1128.3	9	67.386	66.825
1128.4	9	67.365	66.754
1128.5	9	67.344	66.685
1128.6	9	67.344	66.614
1128.7	9	67.323	66.545
1128.8	9	67.302	66.475
1128.9	9	67.281	66.404
1129	9	67.26	66.335
1129.1	9	67.239	66.315
1129.2	9	67.197	66.345
1129.3	9	67.176	66.375

1129.4	9	67.134	66.405
1129.5	9	67.093	66.435
1129.6	9	67.072	66.465
1129.7	9	67.03	66.495
1129.8	9	67.009	66.525
1129.9	9	66.988	66.555
1130	9	66.967	66.585
1130.1	9	66.925	66.58
1130.2	9	66.925	66.54
1130.3	9	66.883	66.5
1130.4	9	66.862	66.46
1130.5	9	66.841	66.42
1130.6	9	66.82	66.38
1130.7	9	66.799	66.34
1130.8	9	66.778	66.3
1130.9	9	66.778	66.26
1131	9	66.737	66.22
1131.1	9	66.695	66.21
1131.2	9	66.674	66.23
1131.3	9	66.653	66.25
1131.4	9	66.653	66.27
1131.5	9	66.611	66.29
1131.6	9	66.59	66.31
1131.7	9	66.548	66.33
1131.8	9	66.548	66.35
1131.9	9	66.527	66.37
1132	9	66.485	66.39
1132.1	9	66.485	66.375
1132.2	9	66.464	66.325
1132.3	9	66.464	66.275
1132.4	9	66.464	66.225
1132.5	9	66.443	66.175
1132.6	9	66.443	66.125
1132.7	9	66.443	66.075
1132.8	9	66.443	66.025
1132.9	9	66.443	65.975
1133	9	66.443	65.925
1133.1	9	66.443	65.91
1133.2	9	66.443	65.93
1133.3	9	66.443	65.95
1133.4	9	66.464	65.971
1133.5	9	66.485	65.99
1133.6	9	66.485	66.01
1133.7	9	66.485	66.03
1133.8	9	66.485	66.05

1133.9	9	66.485	66.07
1134	9	66.464	66.09
1134.1	9	66.464	66.069
1134.2	9	66.443	66.01
1134.3	9	66.422	65.95
1134.4	9	66.38	65.889
1134.5	9	66.339	65.83
1134.6	9	66.276	65.769
1134.7	9	66.192	65.71
1134.8	9	66.129	65.65
1134.9	9	65.941	65.589
1135	9	65.941	65.53
1135.1	9	65.836	65.332
1135.2	9	65.731	65.005
1135.3	9	65.647	64.675
1135.4	9	65.522	64.342
1135.5	9	65.375	64.015
1135.6	9	65.165	63.682
1135.7	9	64.851	63.355
1135.8	9	64.432	63.025
1135.9	9	63.992	62.692
1136	9	63.532	62.365
1136.1	9	63.071	62.2
1136.2	9	62.589	62.2
1136.3	9	62.107	62.2
1136.4	9	61.625	62.2
1136.5	9	61.207	62.2
1136.6	9	60.955	62.2
1136.7	9	60.809	62.2
1136.8	9	60.704	62.2
1136.9	9	60.62	62.2
1137	9	60.578	62.2
1137.1	9	60.578	62.159
1137.2	9	60.599	62.08
1137.3	9	60.641	62
1137.4	9	60.683	61.919
1137.5	9	60.725	61.84
1137.6	9	60.767	61.759
1137.7	9	60.83	61.68
1137.8	9	60.871	61.6
1137.9	9	60.934	61.519
1138	9	60.976	61.44
1138.1	9	61.018	61.385
1138.2	9	61.081	61.355
1138.3	9	61.123	61.325

1138.4	9	61.186	61.295
1138.5	9	61.227	61.265
1138.6	9	61.248	61.235
1138.7	9	61.29	61.205
1138.8	9	61.311	61.175
1138.9	9	61.332	61.145
1139	9	61.353	61.115
1139.1	9	61.374	61.115
1139.2	9	61.395	61.145
1139.3	9	61.416	61.175
1139.4	9	61.458	61.205
1139.5	9	61.479	61.235
1139.6	9	61.5	61.265
1139.7	9	61.542	61.295
1139.8	9	61.563	61.327
1139.9	9	61.605	61.355
1140	9	61.625	61.385
1140.1	9	61.625	61.385
1140.2	9	61.688	61.355
1140.3	9	61.73	61.325
1140.4	9	61.751	61.295
1140.5	9	61.793	61.265
1140.6	9	61.814	61.235
1140.7	9	61.856	61.205
1140.8	9	61.877	61.175
1140.9	9	61.898	61.145
1141	9	61.898	61.115
1141.1	9	61.961	61.115
1141.2	9	61.961	61.145
1141.3	9	61.982	61.175
1141.4	9	61.982	61.205
1141.5	9	62.003	61.235
1141.6	9	61.982	61.265
1141.7	9	61.961	61.295
1141.8	9	61.961	61.325
1141.9	9	61.919	61.355
1142	9	61.856	61.385
1142.1	9	61.835	61.4
1142.2	9	61.835	61.4
1142.3	9	61.835	61.4
1142.4	9	61.814	61.4
1142.5	9	61.814	61.4
1142.6	9	61.793	61.4
1142.7	9	61.793	61.4
1142.8	9	61.793	61.4

1142.9	9	61.793	61.4
1143	9	61.772	61.4
1143.1	9	61.772	61.42
1143.2	9	61.772	61.46
1143.3	9	61.751	61.5
1143.4	9	61.751	61.54
1143.5	9	61.73	61.58
1143.6	9	61.73	61.62
1143.7	9	61.73	61.66
1143.8	9	61.709	61.7
1143.9	9	61.73	61.74
1144	9	61.73	61.78
1144.1	9	61.73	61.8
1144.2	9	61.751	61.8
1144.3	9	61.772	61.8
1144.4	9	61.793	61.8
1144.5	9	61.814	61.8
1144.6	9	61.835	61.8
1144.7	9	61.856	61.8
1144.8	9	61.898	61.8
1144.9	9	61.919	61.8
1145	9	61.94	61.8
1145.1	9	61.961	61.8
1145.2	9	61.982	61.8
1145.3	9	62.003	61.8
1145.4	9	62.023	61.8
1145.5	9	62.023	61.8
1145.6	9	62.023	61.8
1145.7	9	62.023	61.8
1145.8	9	62.003	61.8
1145.9	9	61.982	61.8
1146	9	61.982	61.8
1146.1	9	61.982	61.8
1146.2	9	61.94	61.8
1146.3	9	61.919	61.8
1146.4	9	61.919	61.8
1146.5	9	61.898	61.8
1146.6	9	61.877	61.8
1146.7	9	61.877	61.8
1146.8	9	61.856	61.8
1146.9	9	61.835	61.8
1147	9	61.835	61.8
1147.1	9	61.814	61.82
1147.2	9	61.814	61.86
1147.3	9	61.793	61.9

1147.4	9	61.793	61.94
1147.5	9	61.793	61.98
1147.6	9	61.814	62.02
1147.7	9	61.835	62.06
1147.8	9	61.856	62.1
1147.9	9	61.856	62.14
1148	9	61.877	62.18
1148.1	9	61.877	62.18
1148.2	9	61.877	62.14
1148.3	9	61.856	62.1
1148.4	9	61.856	62.06
1148.5	9	61.856	62.02
1148.6	9	61.835	61.98
1148.7	9	61.835	61.94
1148.8	9	61.835	61.9
1148.9	9	61.814	61.86
1149	9	61.814	61.82
1149.1	9	61.793	61.82
1149.2	9	61.793	61.86
1149.3	9	61.772	61.9
1149.4	9	61.772	61.94
1149.5	9	61.772	61.98
1149.6	9	61.772	62.02
1149.7	9	61.793	62.06
1149.8	9	61.793	62.1
1149.9	9	61.814	62.14
1150	9	61.814	62.18
1150.1	9	61.856	62.22
1150.2	9	61.877	62.26
1150.3	9	61.919	62.3
1150.4	9	61.94	62.34
1150.5	9	61.94	62.38
1150.6	9	62.003	62.42
1150.7	9	62.044	62.46
1150.8	9	62.065	62.5
1150.9	9	62.065	62.54
1151	9	62.128	62.58
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1151.3	9	62.191	62.5
1151.4	9	62.212	62.46
1151.5	9	62.275	62.42
1151.6	9	62.296	62.38
1151.7	9	62.317	62.34
1151.8	9	62.317	62.3

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1152	9	62.359	62.22
1152.1	9	62.38	62.22
1152.2	9	62.38	62.26
1152.3	9	62.401	62.3
1152.4	9	62.421	62.34
1152.5	9	62.484	62.38
1152.6	9	62.484	62.42
1152.7	9	62.505	62.46
1152.8	9	62.526	62.5
1152.9	9	62.547	62.54
1153	9	62.547	62.58
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1153.2	9	62.547	62.54
1153.3	9	62.568	62.5
1153.4	9	62.568	62.46
1153.5	9	62.568	62.42
1153.6	9	62.589	62.38
1153.7	9	62.589	62.34
1153.8	9	62.61	62.3
1153.9	9	62.61	62.26
1154	9	62.61	62.22
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1154.2	9	62.61	62.26
1154.3	9	62.589	62.3
1154.4	9	62.589	62.34
1154.5	9	62.589	62.38
1154.6	9	62.568	62.42
1154.7	9	62.568	62.46
1154.8	9	62.568	62.5
1154.9	9	62.547	62.54
1155	9	62.547	62.58
1155.1	9	62.526	62.6
1155.2	9	62.526	62.6
1155.3	9	62.526	62.6
1155.4	9	62.505	62.6
1155.5	9	62.505	62.6
1155.6	9	62.505	62.6
1155.7	9	62.484	62.6
1155.8	9	62.484	62.6
1155.9	9	62.484	62.6
1156	9	62.484	62.6
1156.1	9	62.463	62.62
1156.2	9	62.463	62.66
1156.3	9	62.463	62.7



1156.4	9	62.442	62.74
1156.5	9	62.442	62.78
1156.6	9	62.442	62.82
1156.7	9	62.442	62.86
1156.8	9	62.442	62.9
1156.9	9	62.442	62.94
1157	9	62.442	62.98
1157.1	9	62.463	62.98
1157.2	9	62.463	62.94
1157.3	9	62.463	62.9
1157.4	9	62.484	62.86
1157.5	9	62.484	62.82
1157.6	9	62.484	62.78
1157.7	9	62.463	62.74
1157.8	9	62.463	62.7
1157.9	9	62.463	62.66
1158	9	62.463	62.62
1158.1	9	62.442	62.58
1158.2	9	62.421	62.54
1158.3	9	62.421	62.5
1158.4	9	62.38	62.46
1158.5	9	62.359	62.42
1158.6	9	62.359	62.38
1158.7	9	62.317	62.34
1158.8	9	62.275	62.3
1158.9	9	62.233	62.26
1159	9	62.233	62.22
1159.1	9	62.107	62.144
1159.2	9	62.023	62.035
1159.3	9	61.94	61.925
1159.4	9	61.856	61.814
1159.5	9	61.856	61.705
1159.6	9	61.667	61.594
1159.7	9	61.584	61.485
1159.8	9	61.479	61.375
1159.9	9	61.479	61.264
1160	9	61.395	61.155
1160.1	9	61.207	61.018
1160.2	9	61.102	60.86
1160.3	9	60.997	60.7
1160.4	9	60.997	60.538
1160.5	9	60.767	60.38
1160.6	9	60.683	60.218
1160.7	9	60.578	60.06
1160.8	9	60.578	59.9

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1161	9	60.306	59.58
1161.1	9	60.201	59.464
1161.2	9	60.201	59.395
1161.3	9	60.096	59.325
1161.4	9	59.992	59.254
1161.5	9	59.782	59.185
1161.6	9	59.677	59.114
1161.7	9	59.677	59.045
1161.8	9	59.552	58.975
1161.9	9	59.279	58.904
1162	9	59.112	58.835
1162.1	9	59.112	58.698
1162.2	9	58.944	58.5
1162.3	9	58.798	58.3
1162.4	9	58.483	58.098
1162.5	9	58.483	57.9
1162.6	9	58.337	57.698
1162.7	9	58.19	57.5
1162.8	9	58.023	57.3
1162.9	9	57.687	57.098
1163	9	57.687	56.9
1163.1	9	57.499	56.744
1163.2	9	57.331	56.635
1163.3	9	56.975	56.525
1163.4	9	56.975	56.414
1163.5	9	56.808	56.305
1163.6	9	56.64	56.194
1163.7	9	56.473	56.085
1163.8	9	56.305	55.975
1163.9	9	56.179	55.864
1164	9	56.096	55.755
1164.1	9	55.991	55.618
1164.2	9	55.907	55.46
1164.3	9	55.823	55.3
1164.4	9	55.718	55.138
1164.5	9	55.635	54.98
1164.6	9	55.551	54.818
1164.7	9	55.446	54.66
1164.8	9	55.3	54.5
1164.9	9	55.174	54.338
1165	9	55.048	54.18
1165.1	9	54.923	53.967
1165.2	9	54.797	53.71
1165.3	9	54.671	53.434

1165.4	9	54.545	53.187
1165.5	9	54.378	52.93
1165.6	9	54.189	52.667
1165.7	9	53.98	52.41
1165.8	9	53.749	52.15
1165.9	9	53.498	51.887
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1166.2	9	52.744	51.155
1166.3	9	52.493	50.925
1166.4	9	52.199	50.693
1166.5	9	51.822	50.465
1166.6	9	51.341	50.233
1166.7	9	50.838	50.005
1166.8	9	50.293	49.775
1166.9	9	49.749	49.543
1167	9	49.246	49.315
1167.1	9	48.932	49.18
1167.2	9	48.743	49.14
1167.3	9	48.618	49.1
1167.4	9	48.513	49.06
1167.5	9	48.408	49.02
1167.6	9	48.345	48.98
1167.7	9	48.24	48.94
1167.8	9	48.178	48.9
1167.9	9	48.094	48.86
1168	9	48.01	48.82
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1168.2	9	47.863	48.62
1168.3	9	47.78	48.5
1168.4	9	47.696	48.379
1168.5	9	47.612	48.26
1168.6	9	47.612	48.139
1168.7	9	47.465	48.02
1168.8	9	47.382	47.9
1168.9	9	47.319	47.779
1169	9	47.235	47.66
1169.1	9	47.235	47.462
1169.2	9	47.088	47.195
1169.3	9	46.984	46.925
1169.4	9	46.858	46.652
1169.5	9	46.858	46.385
1169.6	9	46.334	46.112
1169.7	9	45.978	45.845
1169.8	9	45.622	45.575

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1170.1	9	44.491	44.727
1170.2	9	44.114	44.39
1170.3	9	43.695	44.05
1170.4	9	43.695	43.707
1170.5	9	43.255	43.37
1170.6	9	42.543	43.027
1170.7	9	42.375	42.69
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1170.9	9	42.229	42.007
1171	9	42.061	41.67
1171.1	9	41.684	41.281
1171.2	9	41.475	40.855
1171.3	9	41.475	40.425
1171.4	9	41.223	39.991
1171.5	9	40.972	39.565
1171.6	9	40.344	39.131
1171.7	9	40.344	38.705
1171.8	9	39.987	38.275
1171.9	9	39.631	37.841
1172	9	39.254	37.415
1172.1	9	39.254	37.067
1172.2	9	38.437	36.81
1172.3	9	37.914	36.55
1172.4	9	37.306	36.287
1172.5	9	36.07	36.03
1172.6	9	36.07	35.767
1172.7	9	35.463	35.51
1172.8	9	34.897	35.25
1172.9	9	34.29	34.987
1173	9	33.703	34.73
1173.1	9	33.305	34.518
1173.2	9	33.075	34.36
1173.3	9	32.928	34.2
1173.4	9	32.782	34.038
1173.5	9	32.656	33.88
1173.6	9	32.509	33.718
1173.7	9	32.363	33.56
1173.8	9	32.237	33.4
1173.9	9	32.111	33.238
1174	9	32.007	33.08
1174.1	9	31.902	32.806
1174.2	9	31.797	32.43
1174.3	9	31.693	32.05

1174.4	9	31.567	31.666
1174.5	9	31.42	31.29
1174.6	9	31.253	30.906
1174.7	9	31.064	30.53
1174.8	9	30.834	30.15
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1175	9	30.331	29.39
1175.1	9	30.059	28.848
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1175.6	9	27.734	25.398
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1175.8	9	26.602	24.025
1175.9	9	26.037	23.328
1176	9	25.45	22.645
1176.1	9	24.843	22.065
1176.2	9	24.152	21.61
1176.3	9	23.293	21.15
1176.4	9	22.392	20.685
1176.5	9	21.47	20.23
1176.6	9	20.612	19.765
1176.7	9	20.046	19.31
1176.8	9	19.585	18.85
1176.9	9	19.124	18.385
1177	9	18.664	17.93
1177.1	9	18.287	17.68
1177.2	9	17.951	17.64
1177.3	9	17.658	17.6
1177.4	9	17.449	17.56
1177.5	9	17.281	17.52
1177.6	9	17.155	17.48
1177.7	9	17.072	17.44
1177.8	9	16.967	17.4
1177.9	9	16.883	17.36
1178	9	16.757	17.32
1178.1	9	16.632	17.132
1178.2	9	16.632	16.805
1178.3	9	16.234	16.475
1178.4	9	15.941	16.142
1178.5	9	15.48	15.815
1178.6	9	14.893	15.482
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1178.8	9	13.678	14.825

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1179.1	9	12.401	13.796
1179.2	9	11.772	13.4
1179.3	9	10.62	13
1179.4	9	10.306	12.596
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1179.7	9	9.992	11.4
1179.8	9	9.761	11
1179.9	9	9.594	10.596
1180	9	9.594	10.2
1180.1	9	9.363	9.796
1180.2	9	8.84	9.4
1180.3	9	8.525	9
1180.4	9	8.525	8.596
1180.5	9	8.211	8.2
1180.6	9	7.855	7.796
1180.7	9	7.08	7.4
1180.8	9	6.661	7
1180.9	9	6.661	6.596
1181	9	6.284	6.2
1181.1	9	5.928	5.796
1181.2	9	5.195	5.4
1181.3	9	5.195	5
1181.4	9	4.671	4.596
1181.5	9	4.064	4.2
1181.6	9	2.765	3.796
1181.7	9	2.765	3.4
1181.8	9	2.095	3
1181.9	9	1.424	2.596
1182	9	0.754	2.2
1182.1	9	0.314	1.898
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1182.3	9	0.272	1.5
1182.4	9	0.147	1.298
1182.5	9	0.147	1.1
1182.6	9	0.168	0.898
1182.7	9	0.126	0.7
1182.8	9	0.084	0.5
1182.9	9	0.126	0.298
1183	9	0.105	0.1
1183.1	9	0.063	0
1183.2	9	0.063	0
1183.3	9	0.084	0

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1183.6	9	0.042	0
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1184	9	0.021	0
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1187.9	8	0	0
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1188.1	8	0	0
1188.2	8	0	0
1188.3	8	0	0
1188.4	8	0	0
1188.5	8	0	0
1188.6	8	0	0
1188.7	8	0	0
1188.8	8	0	0
1188.9	8	0	0
1189	8	0	0
1189.1	8	0	0
1189.2	8	0	0
1189.3	8	0	0
1189.4	8	0	0
1189.5	8	0	0
1189.6	8	0	0
1189.7	8	0.021	0
1189.8	8	0.021	0
1189.9	8	0.042	0
1190	8	0.063	0
1190.1	8	0.063	0.01
1190.2	8	0.147	0.03
1190.3	8	0.314	0.05
1190.4	8	0.712	0.07
1190.5	8	0.712	0.09
1190.6	8	0.964	0.11
1190.7	8	1.257	0.13
1190.8	8	1.571	0.15
1190.9	8	2.262	0.17
1191	8	2.262	0.19
1191.1	8	2.639	0.414
1191.2	8	3.058	0.83
1191.3	8	3.896	1.25
1191.4	8	3.896	1.674
1191.5	8	4.357	2.09
1191.6	8	4.86	2.514
1191.7	8	5.404	2.93
1191.8	8	5.991	3.35
1191.9	8	6.598	3.774
1192	8	7.206	4.19
1192.1	8	7.834	4.691
1192.2	8	8.463	5.255
1192.3	8	9.07	5.825



1192.4	8	9.698	6.401
1192.5	8	10.327	6.965
1192.6	8	10.955	7.541
1192.7	8	11.584	8.105
1192.8	8	12.191	8.675
1192.9	8	12.757	9.251
1193	8	13.301	9.815
1193.1	8	13.846	10.381
1193.2	8	14.411	10.925
1193.3	8	14.998	11.475
1193.4	8	15.605	12.031
1193.5	8	16.192	12.575
1193.6	8	16.799	13.131
1193.7	8	17.407	13.675
1193.8	8	18.014	14.225
1193.9	8	18.622	14.781
1194	8	19.229	15.325
1194.1	8	19.837	15.865
1194.2	8	20.444	16.38
1194.3	8	20.968	16.9
1194.4	8	21.408	17.425
1194.5	8	21.764	17.94
1194.6	8	22.057	18.465
1194.7	8	22.329	18.98
1194.8	8	22.581	19.5
1194.9	8	22.853	20.025
1195	8	23.125	20.54
1195.1	8	23.439	21.019
1195.2	8	23.733	21.445
1195.3	8	24.026	21.875
1195.4	8	24.34	22.309
1195.5	8	24.612	22.735
1195.6	8	24.906	23.169
1195.7	8	25.199	23.595
1195.8	8	25.492	24.025
1195.9	8	25.786	24.459
1196	8	26.058	24.885
1196.1	8	26.351	25.233
1196.2	8	26.644	25.49
1196.3	8	26.896	25.75
1196.4	8	27.105	26.013
1196.5	8	27.315	26.27
1196.6	8	27.503	26.533
1196.7	8	27.692	26.79
1196.8	8	27.88	27.05

1196.9	8	28.069	27.313
1197	8	28.236	27.57
1197.1	8	28.341	27.726
1197.2	8	28.425	27.775
1197.3	8	28.467	27.825
1197.4	8	28.467	27.876
1197.5	8	28.467	27.925
1197.6	8	28.446	27.976
1197.7	8	28.425	28.025
1197.8	8	28.425	28.075
1197.9	8	28.404	28.126
1198	8	28.383	28.175
1198.1	8	28.341	28.129
1198.2	8	28.32	27.99
1198.3	8	28.32	27.85
1198.4	8	28.215	27.709
1198.5	8	28.132	27.57
1198.6	8	28.048	27.429
1198.7	8	28.048	27.29
1198.8	8	27.943	27.15
1198.9	8	27.608	27.009
1199	8	27.315	26.87
1199.1	8	27.315	26.698
1199.2	8	26.979	26.5
1199.3	8	26.623	26.3
1199.4	8	25.911	26.098
1199.5	8	25.597	25.9
1199.6	8	25.597	25.698
1199.7	8	25.346	25.5
1199.8	8	25.136	25.3
1199.9	8	24.675	25.098
1200	8	24.675	24.9
1200.1	8	24.445	24.678
1200.2	8	24.194	24.44
1200.3	8	23.712	24.2
1200.4	8	23.46	23.958
1200.5	8	23.46	23.72
1200.6	8	23.209	23.478
1200.7	8	22.958	23.24
1200.8	8	22.455	23
1200.9	8	22.455	22.758
1201	8	22.099	22.52
1201.1	8	21.68	22.13
1201.2	8	21.282	21.605
1201.3	8	20.863	21.075

1201.4	8	20.423	20.54
1201.5	8	19.983	20.015
1201.6	8	19.564	19.48
1201.7	8	19.103	18.955
1201.8	8	18.643	18.425
1201.9	8	18.14	17.89
1202	8	17.574	17.365
1202.1	8	16.946	16.804
1202.2	8	16.297	16.23
1202.3	8	15.584	15.65
1202.4	8	14.788	15.064
1202.5	8	14.034	14.49
1202.6	8	13.343	13.904
1202.7	8	12.694	13.33
1202.8	8	12.023	12.75
1202.9	8	11.353	12.164
1203	8	10.725	11.59
1203.1	8	10.054	11.076
1203.2	8	9.384	10.64
1203.3	8	8.84	10.2
1203.4	8	8.525	9.756
1203.5	8	8.337	9.32
1203.6	8	8.19	8.876
1203.7	8	8.044	8.44
1203.8	8	7.918	8
1203.9	8	7.792	7.556
1204	8	7.667	7.12
1204.1	8	7.583	6.931
1204.2	8	7.52	6.99
1204.3	8	7.478	7.05
1204.4	8	7.436	7.111
1204.5	8	7.415	7.17
1204.6	8	7.373	7.231
1204.7	8	7.331	7.29
1204.8	8	7.31	7.35
1204.9	8	7.289	7.411
1205	8	7.31	7.47
1205.1	8	7.394	7.684
1205.2	8	7.52	8.04
1205.3	8	7.687	8.4
1205.4	8	7.897	8.764
1205.5	8	8.127	9.12
1205.6	8	8.4	9.484
1205.7	8	8.672	9.84
1205.8	8	8.986	10.2

1205.9	8	9.321	10.564
1206	8	9.677	10.92
1206.1	8	9.677	11.319
1206.2	8	10.452	11.745
1206.3	8	10.871	12.175
1206.4	8	11.29	12.609
1206.5	8	11.751	13.035
1206.6	8	12.233	13.469
1206.7	8	12.715	13.895
1206.8	8	13.238	14.325
1206.9	8	13.762	14.759
1207	8	13.762	15.185
1207.1	8	14.893	15.629
1207.2	8	15.48	16.075
1207.3	8	16.087	16.525
1207.4	8	16.087	16.979
1207.5	8	16.674	17.425
1207.6	8	17.889	17.879
1207.7	8	18.496	18.325
1207.8	8	19.124	18.775
1207.9	8	19.124	19.229
1208	8	19.732	19.675
1208.1	8	20.968	20.119
1208.2	8	21.596	20.545
1208.3	8	21.596	20.975
1208.4	8	22.204	21.409
1208.5	8	23.356	21.835
1208.6	8	23.796	22.269
1208.7	8	23.796	22.695
1208.8	8	24.11	23.125
1208.9	8	24.382	23.559
1209	8	24.864	23.985
1209.1	8	25.094	24.348
1209.2	8	25.094	24.635
1209.3	8	25.325	24.925
1209.4	8	25.534	25.218
1209.5	8	25.953	25.505
1209.6	8	25.953	25.798
1209.7	8	26.163	26.085
1209.8	8	26.393	26.375
1209.9	8	26.875	26.668
1210	8	26.875	26.955
1210.1	8	27.105	27.171
1210.2	8	27.336	27.31
1210.3	8	27.545	27.45

1210.4	8	27.88	27.591
1210.5	8	27.88	27.73
1210.6	8	28.006	27.871
1210.7	8	28.09	28.01
1210.8	8	28.153	28.15
1210.9	8	28.215	28.291
1211	8	28.215	28.43
1211.1	8	28.236	28.485
1211.2	8	28.215	28.455
1211.3	8	28.194	28.425
1211.4	8	28.153	28.395
1211.5	8	28.111	28.365
1211.6	8	28.069	28.335
1211.7	8	28.027	28.305
1211.8	8	27.943	28.275
1211.9	8	27.817	28.245
1212	8	27.671	28.215
1212.1	8	27.461	28.067
1212.2	8	27.147	27.81
1212.3	8	26.728	27.55
1212.4	8	26.267	27.287
1212.5	8	25.806	27.03
1212.6	8	25.304	26.767
1212.7	8	24.864	26.51
1212.8	8	24.508	26.25
1212.9	8	24.194	25.987
1213	8	23.921	25.73
1213.1	8	23.712	25.401
1213.2	8	23.544	25.015
1213.3	8	23.377	24.625
1213.4	8	23.209	24.231
1213.5	8	23.041	23.845
1213.6	8	22.874	23.451
1213.7	8	22.623	23.065
1213.8	8	22.329	22.675
1213.9	8	21.994	22.281
1214	8	21.596	21.895
1214.1	8	21.156	21.476
1214.2	8	20.654	21.04
1214.3	8	20.088	20.6
1214.4	8	19.46	20.156
1214.5	8	18.831	19.72
1214.6	8	18.224	19.276
1214.7	8	17.637	18.84
1214.8	8	17.03	18.4

1214.9	8	16.359	17.956
1215	8	15.647	17.52
1215.1	8	14.998	17.035
1215.2	8	14.558	16.52
1215.3	8	14.286	16
1215.4	8	14.034	15.475
1215.5	8	13.804	14.96
1215.6	8	13.574	14.435
1215.7	8	13.28	13.92
1215.8	8	12.924	13.4
1215.9	8	12.568	12.875
1216	8	12.17	12.36
1216.1	8	12.17	11.865
1216.2	8	11.353	11.41
1216.3	8	10.934	10.95
1216.4	8	10.494	10.485
1216.5	8	10.034	10.03
1216.6	8	10.034	9.565
1216.7	8	9.175	9.11
1216.8	8	8.735	8.65
1216.9	8	8.295	8.185
1217	8	8.295	7.73
1217.1	8	7.918	7.413
1217.2	8	7.289	7.245
1217.3	8	6.975	7.075
1217.4	8	6.975	6.903
1217.5	8	6.682	6.735
1217.6	8	6.158	6.563
1217.7	8	5.949	6.395
1217.8	8	5.76	6.225
1217.9	8	5.76	6.053
1218	8	5.551	5.885
1218.1	8	5.153	5.627
1218.2	8	4.922	5.29
1218.3	8	4.922	4.95
1218.4	8	4.713	4.607
1218.5	8	4.483	4.27
1218.6	8	3.959	3.927
1218.7	8	3.959	3.59
1218.8	8	3.708	3.25
1218.9	8	3.435	2.907
1219	8	2.828	2.57
1219.1	8	2.388	2.339
1219.2	8	2.388	2.22
1219.3	8	1.948	2.1

1219.4	8	1.592	1.979
1219.5	8	1.194	1.86
1219.6	8	1.194	1.739
1219.7	8	1.089	1.62
1219.8	8	1.026	1.5
1219.9	8	0.984	1.379
1220	8	0.943	1.26
1220.1	8	0.943	1.236
1220.2	8	0.943	1.305
1220.3	8	0.922	1.375
1220.4	8	0.922	1.446
1220.5	8	0.922	1.515
1220.6	8	0.901	1.586
1220.7	8	0.922	1.655
1220.8	8	0.943	1.725
1220.9	8	1.005	1.796
1221	8	1.068	1.865
1221.1	8	1.152	2.145
1221.2	8	1.257	2.62
1221.3	8	1.362	3.1
1221.4	8	1.466	3.585
1221.5	8	1.613	4.06
1221.6	8	1.76	4.545
1221.7	8	1.969	5.02
1221.8	8	2.262	5.5
1221.9	8	2.66	5.985
1222	8	3.121	6.46
1222.1	8	3.645	6.96
1222.2	8	4.231	7.465
1222.3	8	4.818	7.975
1222.4	8	5.446	8.49
1222.5	8	6.075	8.995
1222.6	8	6.724	9.51
1222.7	8	7.373	10.015
1222.8	8	8.023	10.525
1222.9	8	8.672	11.04
1223	8	9.321	11.545
1223.1	8	9.992	12.055
1223.2	8	10.641	12.55
1223.3	8	11.29	13.05
1223.4	8	11.94	13.555
1223.5	8	12.61	14.05
1223.6	8	13.259	14.555
1223.7	8	13.93	15.05
1223.8	8	14.6	15.55

1223.9	8	15.249	16.055
1224	8	15.249	16.55
1224.1	8	16.569	17.05
1224.2	8	17.218	17.535
1224.3	8	17.889	18.025
1224.4	8	18.538	18.52
1224.5	8	19.187	19.005
1224.6	8	19.837	19.5
1224.7	8	20.486	19.985
1224.8	8	21.135	20.475
1224.9	8	21.764	20.97
1225	8	22.392	21.455
1225.1	8	23.021	21.914
1225.2	8	23.628	22.33
1225.3	8	23.628	22.75
1225.4	8	24.487	23.174
1225.5	8	24.55	23.59
1225.6	8	24.801	24.014
1225.7	8	25.22	24.43
1225.8	8	25.22	24.85
1225.9	8	25.639	25.274
1226	8	25.681	25.69
1226.1	8	25.744	25.992
1226.2	8	25.744	26.17
1226.3	8	25.827	26.35
1226.4	8	25.911	26.532
1226.5	8	26.058	26.71
1226.6	8	26.058	26.892
1226.7	8	26.309	27.07
1226.8	8	26.875	27.25
1226.9	8	27.084	27.432
1227	8	27.21	27.61
1227.1	8	27.21	27.715
1227.2	8	27.315	27.745
1227.3	8	27.817	27.775
1227.4	8	27.88	27.805
1227.5	8	27.88	27.835
1227.6	8	27.901	27.865
1227.7	8	27.88	27.895
1227.8	8	27.859	27.925
1227.9	8	27.859	27.955
1228	8	27.796	27.985
1228.1	8	27.734	27.954
1228.2	8	27.545	27.865
1228.3	8	27.545	27.775



1228.4	8	27.44	27.684
1228.5	8	27.315	27.595
1228.6	8	27.21	27.504
1228.7	8	26.979	27.415
1228.8	8	26.979	27.325
1228.9	8	26.854	27.234
1229	8	26.749	27.145
1229.1	8	26.644	26.962
1229.2	8	26.393	26.695
1229.3	8	26.393	26.425
1229.4	8	26.163	26.152
1229.5	8	25.89	25.885
1229.6	8	25.618	25.612
1229.7	8	25.283	25.345
1229.8	8	24.906	25.075
1229.9	8	24.466	24.802
1230	8	24.047	24.535
1230.1	8	23.628	24.186
1230.2	8	23.23	23.77
1230.3	8	22.874	23.35
1230.4	8	22.56	22.926
1230.5	8	22.246	22.51
1230.6	8	21.931	22.086
1230.7	8	21.554	21.67
1230.8	8	21.114	21.25
1230.9	8	20.654	20.826
1231	8	20.172	20.41
1231.1	8	19.669	19.945
1231.2	8	19.187	19.45
1231.3	8	18.768	18.95
1231.4	8	18.391	18.445
1231.5	8	18.035	17.95
1231.6	8	17.679	17.445
1231.7	8	17.344	16.95
1231.8	8	16.967	16.45
1231.9	8	16.59	15.945
1232	8	16.171	15.45
1232.1	8	15.71	14.899
1232.2	8	15.207	14.315
1232.3	8	14.726	13.725
1232.4	8	14.286	13.129
1232.5	8	13.888	12.545
1232.6	8	13.49	11.949
1232.7	8	13.071	11.365
1232.8	8	12.673	10.775

1232.9	8	12.254	10.179
1233	8	11.856	9.595
1233.1	8	11.437	9.081
1233.2	8	10.997	8.655
1233.3	8	10.432	8.225
1233.4	8	9.845	7.791
1233.5	8	9.217	7.365
1233.6	8	8.609	6.931
1233.7	8	7.981	6.505
1233.8	8	7.331	6.075
1233.9	8	6.682	5.641
1234	8	6.054	5.215
1234.1	8	5.467	4.893
1234.2	8	4.943	4.685
1234.3	8	4.65	4.475
1234.4	8	4.504	4.263
1234.5	8	4.378	4.055
1234.6	8	4.252	3.843
1234.7	8	4.147	3.635
1234.8	8	4.022	3.425
1234.9	8	3.938	3.213
1235	8	3.938	3.005
1235.1	8	3.854	2.875
1235.2	8	3.833	2.825
1235.3	8	3.812	2.775
1235.4	8	3.812	2.725
1235.5	8	3.791	2.675
1235.6	8	3.77	2.625
1235.7	8	3.77	2.575
1235.8	8	3.77	2.525
1235.9	8	3.77	2.475
1236	8	3.833	2.425
1236.1	8	3.875	2.706
1236.2	8	3.938	3.3
1236.3	8	3.938	3.9
1236.4	8	4.043	4.506
1236.5	8	4.441	5.1
1236.6	8	4.713	5.706
1236.7	8	4.713	6.3
1236.8	8	5.027	6.9
1236.9	8	5.383	7.506
1237	8	6.137	8.1
1237.1	8	6.137	8.66
1237.2	8	6.514	9.165
1237.3	8	6.891	9.675

1237.4	8	7.771	10.19
1237.5	8	8.253	10.695
1237.6	8	8.253	11.21
1237.7	8	8.756	11.715
1237.8	8	9.3	12.225
1237.9	8	10.432	12.74
1238	8	10.432	13.245
1238.1	8	11.018	13.719
1238.2	8	11.625	14.145
1238.3	8	12.254	14.575
1238.4	8	13.49	15.009
1238.5	8	13.49	15.435
1238.6	8	14.118	15.869
1238.7	8	14.767	16.295
1238.8	8	16.045	16.725
1238.9	8	16.045	17.159
1239	8	16.674	17.585
1239.1	8	17.323	18.024
1239.2	8	17.951	18.46
1239.3	8	18.601	18.9
1239.4	8	19.25	19.344
1239.5	8	19.899	19.78
1239.6	8	20.528	20.224
1239.7	8	21.177	20.66
1239.8	8	21.806	21.1
1239.9	8	22.434	21.544
1240	8	23.083	21.98
1240.1	8	23.712	22.404
1240.2	8	24.34	22.8
1240.3	8	24.948	23.2
1240.4	8	25.513	23.604
1240.5	8	26.037	24
1240.6	8	26.477	24.404
1240.7	8	26.833	24.8
1240.8	8	27.168	25.2
1240.9	8	27.461	25.604
1241	8	27.755	26
1241.1	8	28.027	26.394
1241.2	8	28.32	26.77
1241.3	8	28.613	27.15
1241.4	8	28.907	27.534
1241.5	8	29.221	27.91
1241.6	8	29.535	28.294
1241.7	8	29.828	28.67
1241.8	8	30.038	29.05

1241.9	8	30.163	29.434
1242	8	30.205	29.81
1242.1	8	30.226	29.99
1242.2	8	30.205	29.97
1242.3	8	30.184	29.95
1242.4	8	30.163	29.93
1242.5	8	30.142	29.91
1242.6	8	30.122	29.89
1242.7	8	30.122	29.87
1242.8	8	30.101	29.85
1242.9	8	30.059	29.83
1243	8	29.975	29.81
1243.1	8	29.849	29.606
1243.2	8	29.703	29.23
1243.3	8	29.556	28.85
1243.4	8	29.367	28.466
1243.5	8	29.032	28.09
1243.6	8	28.634	27.706
1243.7	8	28.215	27.33
1243.8	8	27.775	26.95
1243.9	8	27.273	26.566
1244	8	26.77	26.19
1244.1	8	26.77	25.76
1244.2	8	25.723	25.295
1244.3	8	25.199	24.825
1244.4	8	24.675	24.35
1244.5	8	24.131	23.885
1244.6	8	24.131	23.41
1244.7	8	23.021	22.945
1244.8	8	22.476	22.475
1244.9	8	21.952	22
1245	8	21.952	21.535
1245.1	8	21.429	21.04
1245.2	8	20.402	20.535
1245.3	8	19.879	20.025
1245.4	8	19.376	19.51
1245.5	8	19.376	19.005
1245.6	8	18.412	18.49
1245.7	8	17.93	17.985
1245.8	8	17.47	17.475
1245.9	8	17.47	16.96
1246	8	17.009	16.455
1246.1	8	15.941	15.955
1246.2	8	15.354	15.48
1246.3	8	15.354	15

1246.4	8	14.851	14.515
1246.5	8	14.411	14.04
1246.6	8	13.511	13.555
1246.7	8	13.511	13.08
1246.8	8	13.071	12.6
1246.9	8	12.61	12.115
1247	8	11.73	11.64
1247.1	8	11.269	11.155
1247.2	8	11.269	10.68
1247.3	8	10.829	10.2
1247.4	8	10.348	9.715
1247.5	8	9.384	9.24
1247.6	8	9.384	8.755
1247.7	8	8.902	8.28
1247.8	8	8.421	7.8
1247.9	8	7.918	7.315
1248	8	6.891	6.84
1248.1	8	6.891	6.396
1248.2	8	6.368	6
1248.3	8	5.865	5.6
1248.4	8	5.383	5.196
1248.5	8	4.881	4.8
1248.6	8	4.378	4.396
1248.7	8	3.833	4
1248.8	8	3.268	3.6
1248.9	8	2.723	3.196
1249	8	2.199	2.8
1249.1	8	1.697	2.467
1249.2	8	1.194	2.21
1249.3	8	0.691	1.95
1249.4	8	0.314	1.687
1249.5	8	0.189	1.43
1249.6	8	0.168	1.167
1249.7	8	0.126	0.91
1249.8	8	0.063	0.65
1249.9	8	0.063	0.387
1250	8	0.063	0.13
1250.1	8	0.042	0
1250.2	8	0.042	0
1250.3	8	0.042	0
1250.4	8	0.042	0
1250.5	8	0.021	0
1250.6	8	0.021	0
1250.7	8	0.021	0
1250.8	8	0.021	0

1250.9	8	0	0
1251	8	0.021	0
1251.1	8	0	0
1251.2	8	0	0
1251.3	8	0	0
1251.4	8	0	0
1251.5	8	0	0
1251.6	8	0	0
1251.7	8	0	0
1251.8	8	0	0
1251.9	8	0	0
1252	8	0	0
1252.1	8	0	0
1252.2	8	0	0
1252.3	8	0	0
1252.4	8	0	0
1252.5	8	0	0
1252.6	8	0	0
1252.7	8	0	0
1252.8	8	0	0
1252.9	8	0	0
1253	8	0	0
1253.1	8	0	0
1253.2	8	0	0
1253.3	8	0	0
1253.4	8	0	0
1253.5	8	0	0
1253.6	8	0	0
1253.7	8	0	0
1253.8	8	0	0
1253.9	8	0	0
1254	8	0	0
1254.1	8	0	0
1254.2	8	0	0
1254.3	8	0	0
1254.4	8	0	0
1254.5	8	0	0
1254.6	8	0	0
1254.7	8	0	0
1254.8	8	0	0
1254.9	8	0	0
1255	8	0	0
1255.1	8	0	0
1255.2	8	0	0
1255.3	8	0	0

1255.4	8	0	0
1255.5	8	0	0
1255.6	8	0	0
1255.7	8	0	0
1255.8	8	0	0
1255.9	8	0	0
1256	8	0	0
1256.1	8	0	0
1256.2	8	0	0
1256.3	8	0	0
1256.4	8	0	0
1256.5	8	0	0
1256.6	8	0	0
1256.7	8	0	0
1256.8	8	0	0
1256.9	8	0.021	0
1257	8	0.021	0
1257.1	8	0.042	0.015
1257.2	8	0.126	0.045
1257.3	8	0.126	0.075
1257.4	8	0.293	0.105
1257.5	8	0.503	0.135
1257.6	8	0.712	0.165
1257.7	8	0.943	0.195
1257.8	8	1.194	0.225
1257.9	8	1.487	0.255
1258	8	1.76	0.285
1258.1	8	2.367	0.611
1258.2	8	2.367	1.215
1258.3	8	2.702	1.825
1258.4	8	3.1	2.441
1258.5	8	3.519	3.045
1258.6	8	4.001	3.661
1258.7	8	4.545	4.265
1258.8	8	5.132	4.875
1258.9	8	5.76	5.491
1259	8	6.41	6.095
1259.1	8	7.059	6.721
1259.2	8	7.687	7.345
1259.3	8	8.337	7.975
1259.4	8	8.986	8.611
1259.5	8	9.636	9.235
1259.6	8	10.264	9.871
1259.7	8	10.913	10.495
1259.8	8	11.563	11.125

1259.9	8	12.212	11.761
1260	8	12.84	12.385
1260.1	8	13.406	13.031
1260.2	8	13.951	13.675
1260.3	8	14.537	14.325
1260.4	8	15.145	14.981
1260.5	8	15.752	15.625
1260.6	8	16.38	16.281
1260.7	8	16.988	16.925
1260.8	8	17.616	17.575
1260.9	8	18.245	18.232
1261	8	18.873	18.875
1261.1	8	19.481	19.435
1261.2	8	20.109	19.89
1261.3	8	20.716	20.35
1261.4	8	21.282	20.815
1261.5	8	21.785	21.27
1261.6	8	22.246	21.735
1261.7	8	22.643	22.19
1261.8	8	23.041	22.65
1261.9	8	23.419	23.115
1262	8	23.817	23.57
1262.1	8	24.235	24.024
1262.2	8	24.633	24.46
1262.3	8	25.031	24.9
1262.4	8	25.429	25.344
1262.5	8	25.827	25.78
1262.6	8	26.246	26.224
1262.7	8	26.665	26.66
1262.8	8	27.084	27.1
1262.9	8	27.084	27.544
1263	8	27.964	27.98
1263.1	8	28.425	28.542
1263.2	8	28.886	29.205
1263.3	8	28.886	29.875
1263.4	8	29.828	30.552
1263.5	8	30.331	31.215
1263.6	8	30.834	31.892
1263.7	8	31.336	32.555
1263.8	8	31.336	33.225
1263.9	8	32.405	33.902
1264	8	32.928	34.565
1264.1	8	33.473	35.033
1264.2	8	33.473	35.29
1264.3	8	34.541	35.55



1264.4	8	35.065	35.813
1264.5	8	35.568	36.07
1264.6	8	35.568	36.333
1264.7	8	36.091	36.59
1264.8	8	37.055	36.85
1264.9	8	37.516	37.113
1265	8	37.516	37.37
1265.1	8	37.956	37.643
1265.2	8	38.375	37.92
1265.3	8	39.171	38.2
1265.4	8	39.527	38.483
1265.5	8	39.527	38.76
1265.6	8	39.862	39.043
1265.7	8	40.469	39.32
1265.8	8	40.762	39.6
1265.9	8	40.762	39.883
1266	8	41.035	40.16
1266.1	8	41.328	40.54
1266.2	8	41.894	41.005
1266.3	8	41.894	41.475
1266.4	8	42.187	41.95
1266.5	8	42.48	42.415
1266.6	8	42.752	42.89
1266.7	8	43.318	43.355
1266.8	8	43.318	43.825
1266.9	8	43.611	44.3
1267	8	43.904	44.765
1267.1	8	44.198	45.25
1267.2	8	44.512	45.735
1267.3	8	44.826	46.225
1267.4	8	45.161	46.72
1267.5	8	45.496	47.205
1267.6	8	45.853	47.7
1267.7	8	46.188	48.185
1267.8	8	46.544	48.675
1267.9	8	46.9	49.17
1268	8	47.256	49.655
1268.1	8	47.612	49.987
1268.2	8	47.968	50.155
1268.3	8	48.324	50.325
1268.4	8	48.68	50.497
1268.5	8	49.016	50.665
1268.6	8	49.372	50.837
1268.7	8	49.728	51.005
1268.8	8	50.042	51.175

1268.9	8	50.335	51.347
1269	8	50.607	51.515
1269.1	8	50.838	51.58
1269.2	8	51.005	51.54
1269.3	8	51.11	51.5
1269.4	8	51.173	51.46
1269.5	8	51.173	51.42
1269.6	8	51.152	51.38
1269.7	8	51.11	51.34
1269.8	8	51.068	51.3
1269.9	8	51.026	51.26
1270	8	50.985	51.22
1270.1	8	50.943	51.169
1270.2	8	50.901	51.11
1270.3	8	50.859	51.05
1270.4	8	50.796	50.989
1270.5	8	50.733	50.93
1270.6	8	50.649	50.869
1270.7	8	50.545	50.81
1270.8	8	50.461	50.75
1270.9	8	50.356	50.689
1271	8	50.272	50.63
1271.1	8	50.189	50.564
1271.2	8	50.105	50.495
1271.3	8	50.021	50.425
1271.4	8	49.937	50.354
1271.5	8	49.853	50.285
1271.6	8	49.77	50.214
1271.7	8	49.707	50.145
1271.8	8	49.623	50.075
1271.9	8	49.539	50.004
1272	8	49.455	49.935
1272.1	8	49.372	49.793
1272.2	8	49.288	49.585
1272.3	8	49.204	49.375
1272.4	8	49.204	49.163
1272.5	8	49.036	48.955
1272.6	8	48.953	48.743
1272.7	8	48.869	48.535
1272.8	8	48.869	48.325
1272.9	8	48.597	48.113
1273	8	48.408	47.905
1273.1	8	48.22	47.637
1273.2	8	48.031	47.32
1273.3	8	48.031	47

1273.4	8	47.633	46.677
1273.5	8	47.445	46.36
1273.6	8	47.193	46.037
1273.7	8	47.193	45.72
1273.8	8	46.879	45.4
1273.9	8	46.209	45.077
1274	8	45.832	44.76
1274.1	8	45.434	44.427
1274.2	8	45.434	44.09
1274.3	8	44.994	43.75
1274.4	8	43.737	43.407
1274.5	8	42.962	43.07
1274.6	8	42.962	42.727
1274.7	8	42.166	42.39
1274.8	8	40.846	42.05
1274.9	8	40.281	41.707
1275	8	40.281	41.37
1275.1	8	39.736	41.027
1275.2	8	39.171	40.69
1275.3	8	38.039	40.35
1275.4	8	37.474	40.007
1275.5	8	37.474	39.67
1275.6	8	36.887	39.327
1275.7	8	36.28	38.99
1275.8	8	35.044	38.65
1275.9	8	35.044	38.307
1276	8	35.044	37.97
1276.1	8	34.122	37.576
1276.2	8	33.703	37.14
1276.3	8	33.305	36.7
1276.4	8	32.907	36.256
1276.5	8	32.468	35.82
1276.6	8	32.07	35.376
1276.7	8	31.295	34.94
1276.8	8	31.295	34.5
1276.9	8	30.917	34.056
1277	8	30.499	33.62
1277.1	8	30.122	33.125
1277.2	8	29.744	32.59
1277.3	8	29.346	32.05
1277.4	8	28.969	31.505
1277.5	8	28.571	30.97
1277.6	8	28.173	30.425
1277.7	8	27.775	29.89
1277.8	8	27.419	29.35

1277.9	8	27.021	28.805
1278	8	26.623	28.27
1278.1	8	26.163	27.781
1278.2	8	25.681	27.355
1278.3	8	25.199	26.925
1278.4	8	24.717	26.491
1278.5	8	24.215	26.065
1278.6	8	23.691	25.631
1278.7	8	23.209	25.205
1278.8	8	22.727	24.775
1278.9	8	22.225	24.341
1279	8	21.764	23.915
1279.1	8	21.324	23.45
1279.2	8	20.884	22.965
1279.3	8	20.402	22.475
1279.4	8	19.899	21.98
1279.5	8	19.481	21.495
1279.6	8	19.041	21
1279.7	8	18.601	20.515
1279.8	8	18.161	20.025
1279.9	8	17.763	19.53
1280	8	17.386	19.045
1280.1	8	17.009	18.499
1280.2	8	16.59	17.915
1280.3	8	16.15	17.325
1280.4	8	15.71	16.729
1280.5	8	15.291	16.145
1280.6	8	14.914	15.549
1280.7	8	14.579	14.965
1280.8	8	14.286	14.375
1280.9	8	13.93	13.779
1281	8	13.594	13.195
1281.1	8	13.238	12.558
1281.2	8	12.84	11.895
1281.3	8	12.442	11.225
1281.4	8	12.023	10.548
1281.5	8	11.563	9.885
1281.6	8	11.081	9.208
1281.7	8	10.599	8.545
1281.8	8	10.034	7.875
1281.9	8	9.363	7.198
1282	8	9.363	6.535
1282.1	8	7.897	5.996
1282.2	8	7.164	5.6
1282.3	8	6.431	5.2

1282.4	8	5.698	4.796
1282.5	8	4.964	4.4
1282.6	8	4.231	3.996
1282.7	8	3.561	3.6
1282.8	8	2.933	3.2
1282.9	8	2.933	2.796
1283	8	2.011	2.4
1283.1	8	1.613	2.088
1283.2	8	1.236	1.87
1283.3	8	1.236	1.65
1283.4	8	0.901	1.428
1283.5	8	0.23	1.21
1283.6	8	0.189	0.988
1283.7	8	0.189	0.77
1283.8	8	0.189	0.55
1283.9	8	0.126	0.328
1284	8	0.105	0.11
1284.1	8	0.084	0
1284.2	8	0.084	0
1284.3	8	0.042	0
1284.4	8	0.063	0
1284.5	8	0.021	0
1284.6	8	0.021	0
1284.7	8	0.021	0
1284.8	8	0.042	0
1284.9	8	0.021	0
1285	8	0.021	0
1285.1	0	0.021	0
1285.2	0	0	0
1285.3	0	0	0
1285.4	0	0	0
1285.5	0	0	0
1285.6	0	0	0
1285.7	0	0	0
1285.8	0	0	0
1285.9	0	0	0
1286	0	0	0

Test Facility	EPA_NVFEL	Time	Cycle ID	VROLL_i	VSCHED_i
Manufacturer	see test report		0	0	-0.021
Model	-		0.1	0	-0.021
Vehicle ID	FAPA-AAF		0.2	0	-0.021
Veh Config	1		0.3	0	-0.021
Test Date	41668		0.4	0	-0.021
Test Type	Highway		0.5	0	-0.021
Test ID	140038005		0.6	0	-0.021
ETW (lbs)	3500		0.7	0	-0.021
F0 (lbf)	35.97		0.8	0	-0.021
F1 (lbf/mph)	0.1447		0.9	0	-0.021
F2 (lbf/mph)	0.01612		1	0	-0.021
Speed Units	mph		1.1	0	-0.021
Regen Brake	N		1.2	0	-0.021
Dyno ID	D002		1.3	0	-0.021
			1.4	0	-0.021
			1.5	0	-0.021
			1.6	0	-0.021
			1.7	0	-0.021
			1.8	0	-0.021
			1.9	0	0
			2	0	0
			2.1	0	0
			2.2	0	0.021
			2.3	0	0.021
			2.4	0	0.042
			2.5	0	0.042
			2.6	0	0.084
			2.7	0	0.461
			2.8	0	0.67
			2.9	0	0.67
			3	0	0.901
			3.1	0	1.424
			3.2	0	1.718
			3.3	0	1.718
			3.4	0	2.011
			3.5	0	2.304
			3.6	0	2.933
			3.7	0	3.226
			3.8	0	3.226
			3.9	0	3.54
			4	0	3.833
			4.1	0	4.462
			4.2	0	4.462
			4.3	0	4.797
					5.7

4.4	0	4.797	6.02
4.5	0	5.844	6.34
4.6	0	5.844	6.66
4.7	0	6.242	6.98
4.8	0	6.64	7.3
4.9	0	7.038	7.62
5	0	7.771	7.94
5.1	0	7.771	8.26
5.2	0	8.085	8.58
5.3	0	8.379	8.9
5.4	0	8.672	9.22
5.5	0	8.944	9.54
5.6	0	9.238	9.86
5.7	0	9.51	10.18
5.8	0	9.824	10.5
5.9	0	10.138	10.82
6	0	10.473	11.14
6.1	0	10.809	11.46
6.2	0	11.123	11.78
6.3	0	11.458	12.1
6.4	0	11.793	12.42
6.5	0	12.107	12.74
6.6	0	12.442	13.06
6.7	0	12.778	13.38
6.8	0	13.113	13.7
6.9	0	13.511	14.02
7	0	13.909	14.34
7.1	0	14.349	14.64
7.2	0	14.788	14.92
7.3	0	15.165	15.2
7.4	0	15.48	15.48
7.5	0	15.752	15.76
7.6	0	16.024	16.04
7.7	0	16.276	16.32
7.8	0	16.548	16.6
7.9	0	16.799	16.88
8	0	17.072	17.16
8.1	0	17.323	17.415
8.2	0	17.574	17.645
8.3	0	17.784	17.875
8.4	0	17.993	18.105
8.5	0	18.182	18.335
8.6	0	18.37	18.565
8.7	0	18.559	18.795
8.8	0	18.747	19.025

8.9	0	18.936	19.255
9	0	19.145	19.485
9.1	0	19.355	19.71
9.2	0	19.585	19.93
9.3	0	19.816	20.15
9.4	0	20.046	20.37
9.5	0	20.256	20.59
9.6	0	20.486	20.81
9.7	0	20.716	21.03
9.8	0	20.926	21.25
9.9	0	21.156	21.47
10	0	21.366	21.69
10.1	0	21.596	21.91
10.2	0	21.827	22.13
10.3	0	21.827	22.35
10.4	0	22.308	22.57
10.5	0	22.539	22.79
10.6	0	22.79	23.01
10.7	0	23.041	23.23
10.8	0	23.293	23.45
10.9	0	23.544	23.67
11	0	23.775	23.89
11.1	0	23.984	24.09
11.2	0	23.984	24.27
11.3	0	24.194	24.45
11.4	0	24.612	24.63
11.5	0	24.822	24.81
11.6	0	24.99	24.99
11.7	0	24.99	25.17
11.8	0	25.262	25.35
11.9	0	25.367	25.53
12	0	25.45	25.71
12.1	0	25.45	25.865
12.2	0	25.555	25.995
12.3	0	25.765	26.125
12.4	0	25.869	26.255
12.5	0	25.995	26.385
12.6	0	25.995	26.515
12.7	0	26.121	26.645
12.8	0	26.393	26.775
12.9	0	26.54	26.905
13	0	26.54	27.035
13.1	0	26.665	27.145
13.2	0	26.791	27.235
13.3	0	27.063	27.325



13.4	0	27.21	27.415
13.5	0	27.21	27.505
13.6	0	27.336	27.595
13.7	0	27.461	27.685
13.8	0	27.713	27.775
13.9	0	27.713	27.865
14	0	27.838	27.955
14.1	0	27.964	28.05
14.2	0	28.215	28.15
14.3	0	28.215	28.25
14.4	0	28.32	28.35
14.5	0	28.446	28.45
14.6	0	28.55	28.55
14.7	0	28.781	28.65
14.8	0	28.781	28.75
14.9	0	28.886	28.85
15	0	28.99	28.95
15.1	0	29.095	29.05
15.2	0	29.2	29.15
15.3	0	29.284	29.25
15.4	0	29.388	29.35
15.5	0	29.472	29.45
15.6	0	29.556	29.55
15.7	0	29.64	29.65
15.8	0	29.724	29.75
15.9	0	29.807	29.85
16	0	29.891	29.95
16.1	0	29.975	30.035
16.2	0	30.038	30.105
16.3	0	30.122	30.175
16.4	0	30.184	30.245
16.5	0	30.268	30.315
16.6	0	30.331	30.385
16.7	0	30.415	30.455
16.8	0	30.478	30.525
16.9	0	30.561	30.595
17	0	30.645	30.665
17.1	0	30.729	30.74
17.2	0	30.813	30.82
17.3	0	30.897	30.9
17.4	0	30.897	30.98
17.5	0	31.085	31.06
17.6	0	31.169	31.14
17.7	0	31.274	31.22
17.8	0	31.357	31.3

17.9	0	31.441	31.38
18	0	31.504	31.46
18.1	0	31.567	31.535
18.2	0	31.651	31.605
18.3	0	31.713	31.675
18.4	0	31.776	31.745
18.5	0	31.839	31.815
18.6	0	31.881	31.885
18.7	0	31.923	31.955
18.8	0	31.965	32.025
18.9	0	32.007	32.095
19	0	32.049	32.165
19.1	0	32.09	32.235
19.2	0	32.111	32.305
19.3	0	32.153	32.375
19.4	0	32.195	32.445
19.5	0	32.216	32.515
19.6	0	32.258	32.585
19.7	0	32.3	32.655
19.8	0	32.321	32.725
19.9	0	32.363	32.795
20	0	32.405	32.865
20.1	0	32.405	32.93
20.2	0	32.488	32.99
20.3	0	32.593	33.05
20.4	0	32.677	33.11
20.5	0	32.677	33.17
20.6	0	32.866	33.23
20.7	0	32.949	33.29
20.8	0	33.054	33.35
20.9	0	33.138	33.41
21	0	33.138	33.47
21.1	0	33.326	33.53
21.2	0	33.389	33.59
21.3	0	33.452	33.65
21.4	0	33.452	33.71
21.5	0	33.515	33.77
21.6	0	33.62	33.83
21.7	0	33.682	33.89
21.8	0	33.682	33.95
21.9	0	33.724	34.01
22	0	33.766	34.07
22.1	0	33.871	34.125
22.2	0	33.913	34.175
22.3	0	33.913	34.225

22.4	0	33.955	34.275
22.5	0	33.997	34.325
22.6	0	34.059	34.375
22.7	0	34.059	34.425
22.8	0	34.08	34.475
22.9	0	34.101	34.525
23	0	34.164	34.575
23.1	0	34.185	34.615
23.2	0	34.185	34.645
23.3	0	34.227	34.675
23.4	0	34.248	34.705
23.5	0	34.332	34.735
23.6	0	34.332	34.765
23.7	0	34.395	34.795
23.8	0	34.457	34.825
23.9	0	34.52	34.855
24	0	34.646	34.885
24.1	0	34.646	34.91
24.2	0	34.709	34.93
24.3	0	34.751	34.95
24.4	0	34.814	34.97
24.5	0	34.876	34.99
24.6	0	34.939	35.01
24.7	0	35.002	35.03
24.8	0	35.065	35.05
24.9	0	35.128	35.07
25	0	35.191	35.09
25.1	0	35.253	35.13
25.2	0	35.316	35.19
25.3	0	35.379	35.25
25.4	0	35.442	35.31
25.5	0	35.505	35.37
25.6	0	35.568	35.43
25.7	0	35.631	35.49
25.8	0	35.693	35.55
25.9	0	35.735	35.61
26	0	35.777	35.67
26.1	0	35.84	35.71
26.2	0	35.882	35.73
26.3	0	35.924	35.75
26.4	0	35.966	35.77
26.5	0	35.987	35.79
26.6	0	36.028	35.81
26.7	0	36.049	35.83
26.8	0	36.049	35.85

26.9	0	36.049	35.87
27	0	36.028	35.89
27.1	0	36.008	35.895
27.2	0	35.987	35.885
27.3	0	35.966	35.875
27.4	0	35.924	35.865
27.5	0	35.882	35.855
27.6	0	35.84	35.845
27.7	0	35.777	35.835
27.8	0	35.735	35.825
27.9	0	35.693	35.815
28	0	35.631	35.805
28.1	0	35.568	35.775
28.2	0	35.526	35.725
28.3	0	35.463	35.675
28.4	0	35.4	35.625
28.5	0	35.337	35.575
28.6	0	35.274	35.525
28.7	0	35.233	35.475
28.8	0	35.191	35.425
28.9	0	35.128	35.375
29	0	35.086	35.325
29.1	0	35.044	35.28
29.2	0	34.981	35.24
29.3	0	34.939	35.2
29.4	0	34.876	35.16
29.5	0	34.835	35.12
29.6	0	34.793	35.08
29.7	0	34.751	35.04
29.8	0	34.73	35
29.9	0	34.709	34.96
30	0	34.688	34.92
30.1	0	34.667	34.88
30.2	0	34.667	34.84
30.3	0	34.667	34.8
30.4	0	34.688	34.76
30.5	0	34.688	34.72
30.6	0	34.688	34.68
30.7	0	34.688	34.64
30.8	0	34.688	34.6
30.9	0	34.688	34.56
31	0	34.667	34.52
31.1	0	34.667	34.505
31.2	0	34.646	34.515
31.3	0	34.625	34.525

31.4	0	34.625	34.535
31.5	0	34.625	34.545
31.6	0	34.625	34.555
31.7	0	34.646	34.565
31.8	0	34.667	34.575
31.9	0	34.667	34.585
32	0	34.688	34.595
32.1	0	34.73	34.61
32.2	0	34.814	34.63
32.3	0	34.814	34.65
32.4	0	34.876	34.67
32.5	0	34.918	34.69
32.6	0	34.96	34.71
32.7	0	35.086	34.73
32.8	0	35.086	34.75
32.9	0	35.128	34.77
33	0	35.191	34.79
33.1	0	35.253	34.815
33.2	0	35.295	34.845
33.3	0	35.358	34.875
33.4	0	35.4	34.905
33.5	0	35.463	34.935
33.6	0	35.568	34.965
33.7	0	35.568	34.995
33.8	0	35.61	35.025
33.9	0	35.651	35.055
34	0	35.714	35.085
34.1	0	35.756	35.13
34.2	0	35.798	35.19
34.3	0	35.84	35.25
34.4	0	35.903	35.31
34.5	0	35.945	35.37
34.6	0	35.987	35.43
34.7	0	36.028	35.49
34.8	0	36.07	35.55
34.9	0	36.07	35.61
35	0	36.091	35.67
35.1	0	36.091	35.72
35.2	0	36.07	35.76
35.3	0	36.07	35.8
35.4	0	36.091	35.84
35.5	0	36.091	35.88
35.6	0	36.091	35.92
35.7	0	36.112	35.96
35.8	0	36.133	36

35.9	0	36.133	36.04
36	0	36.154	36.08
36.1	0	36.154	36.105
36.2	0	36.175	36.115
36.3	0	36.175	36.125
36.4	0	36.196	36.135
36.5	0	36.196	36.145
36.6	0	36.217	36.155
36.7	0	36.217	36.165
36.8	0	36.238	36.175
36.9	0	36.259	36.185
37	0	36.259	36.195
37.1	0	36.28	36.215
37.2	0	36.301	36.245
37.3	0	36.322	36.275
37.4	0	36.343	36.305
37.5	0	36.364	36.335
37.6	0	36.385	36.365
37.7	0	36.426	36.395
37.8	0	36.447	36.425
37.9	0	36.468	36.455
38	0	36.489	36.485
38.1	0	36.531	36.51
38.2	0	36.552	36.53
38.3	0	36.573	36.55
38.4	0	36.615	36.57
38.5	0	36.636	36.59
38.6	0	36.678	36.61
38.7	0	36.72	36.63
38.8	0	36.741	36.65
38.9	0	36.783	36.67
39	0	36.804	36.69
39.1	0	36.845	36.71
39.2	0	36.866	36.73
39.3	0	36.866	36.75
39.4	0	36.908	36.77
39.5	0	36.929	36.79
39.6	0	36.95	36.81
39.7	0	36.95	36.83
39.8	0	36.992	36.85
39.9	0	36.992	36.87
40	0	37.013	36.89
40.1	0	37.013	36.905
40.2	0	37.013	36.915
40.3	0	37.034	36.925

40.4	0	37.055	36.935
40.5	0	37.055	36.945
40.6	0	37.055	36.955
40.7	0	37.055	36.965
40.8	0	37.076	36.975
40.9	0	37.097	36.985
41	0	37.097	36.995
41.1	0	37.097	37
41.2	0	37.097	37
41.3	0	37.118	37
41.4	0	37.118	37
41.5	0	37.118	37
41.6	0	37.139	37
41.7	0	37.16	37
41.8	0	37.16	37
41.9	0	37.16	37
42	0	37.16	37
42.1	0	37.181	37
42.2	0	37.202	37
42.3	0	37.202	37
42.4	0	37.202	37
42.5	0	37.222	37
42.6	0	37.222	37
42.7	0	37.243	37
42.8	0	37.243	37
42.9	0	37.243	37
43	0	37.264	37
43.1	0	37.264	37
43.2	0	37.264	37
43.3	0	37.285	37
43.4	0	37.285	37
43.5	0	37.306	37
43.6	0	37.306	37
43.7	0	37.327	37
43.8	0	37.327	37
43.9	0	37.327	37
44	0	37.306	37
44.1	0	37.285	37
44.2	0	37.264	37
44.3	0	37.243	37
44.4	0	37.222	37
44.5	0	37.202	37
44.6	0	37.181	37
44.7	0	37.16	37
44.8	0	37.139	37

44.9	0	37.139	37
45	0	37.118	37
45.1	0	37.097	37
45.2	0	37.076	37
45.3	0	37.055	37
45.4	0	37.055	37
45.5	0	37.034	37
45.6	0	37.013	37
45.7	0	36.992	37
45.8	0	36.992	37
45.9	0	36.971	37
46	0	36.95	37
46.1	0	36.929	37.005
46.2	0	36.929	37.015
46.3	0	36.908	37.025
46.4	0	36.887	37.035
46.5	0	36.887	37.045
46.6	0	36.866	37.055
46.7	0	36.866	37.065
46.8	0	36.845	37.075
46.9	0	36.845	37.085
47	0	36.845	37.095
47.1	0	36.866	37.11
47.2	0	36.866	37.13
47.3	0	36.887	37.15
47.4	0	36.908	37.17
47.5	0	36.929	37.19
47.6	0	36.95	37.21
47.7	0	36.971	37.23
47.8	0	37.013	37.25
47.9	0	37.034	37.27
48	0	37.076	37.29
48.1	0	37.097	37.325
48.2	0	37.139	37.375
48.3	0	37.181	37.425
48.4	0	37.222	37.475
48.5	0	37.222	37.525
48.6	0	37.327	37.575
48.7	0	37.369	37.628
48.8	0	37.432	37.675
48.9	0	37.432	37.725
49	0	37.558	37.775
49.1	0	37.641	37.84
49.2	0	37.704	37.92
49.3	0	37.704	38



49.4	0	37.788	38.08
49.5	0	37.935	38.16
49.6	0	38.018	38.24
49.7	0	38.102	38.32
49.8	0	38.102	38.4
49.9	0	38.186	38.48
50	0	38.354	38.56
50.1	0	38.437	38.635
50.2	0	38.437	38.705
50.3	0	38.5	38.775
50.4	0	38.668	38.845
50.5	0	38.752	38.915
50.6	0	38.752	38.985
50.7	0	38.835	39.055
50.8	0	38.919	39.125
50.9	0	39.087	39.195
51	0	39.171	39.265
51.1	0	39.171	39.335
51.2	0	39.254	39.405
51.3	0	39.338	39.475
51.4	0	39.506	39.545
51.5	0	39.506	39.615
51.6	0	39.589	39.685
51.7	0	39.673	39.755
51.8	0	39.841	39.825
51.9	0	39.841	39.895
52	0	39.904	39.965
52.1	0	39.987	40.035
52.2	0	40.071	40.105
52.3	0	40.155	40.175
52.4	0	40.239	40.245
52.5	0	40.302	40.315
52.6	0	40.385	40.385
52.7	0	40.469	40.455
52.8	0	40.532	40.525
52.9	0	40.616	40.595
53	0	40.679	40.665
53.1	0	40.742	40.735
53.2	0	40.804	40.805
53.3	0	40.867	40.875
53.4	0	40.951	40.945
53.5	0	41.014	41.015
53.6	0	41.077	41.085
53.7	0	41.16	41.155
53.8	0	41.223	41.225

53.9	0	41.286	41.295
54	0	41.37	41.365
54.1	0	41.433	41.44
54.2	0	41.517	41.52
54.3	0	41.579	41.6
54.4	0	41.663	41.68
54.5	0	41.726	41.76
54.6	0	41.81	41.84
54.7	0	41.873	41.92
54.8	0	41.956	42
54.9	0	42.019	42.08
55	0	42.082	42.16
55.1	0	42.145	42.235
55.2	0	42.208	42.305
55.3	0	42.271	42.375
55.4	0	42.333	42.445
55.5	0	42.396	42.515
55.6	0	42.459	42.585
55.7	0	42.522	42.655
55.8	0	42.585	42.725
55.9	0	42.648	42.795
56	0	42.711	42.865
56.1	0	42.773	42.93
56.2	0	42.836	42.99
56.3	0	42.836	43.05
56.4	0	42.962	43.11
56.5	0	43.025	43.17
56.6	0	43.088	43.23
56.7	0	43.15	43.29
56.8	0	43.192	43.35
56.9	0	43.255	43.41
57	0	43.318	43.47
57.1	0	43.381	43.525
57.2	0	43.444	43.575
57.3	0	43.486	43.625
57.4	0	43.548	43.675
57.5	0	43.548	43.725
57.6	0	43.674	43.775
57.7	0	43.737	43.825
57.8	0	43.779	43.875
57.9	0	43.842	43.925
58	0	43.904	43.975
58.1	0	43.946	44.015
58.2	0	43.967	44.045
58.3	0	43.988	44.075

58.4	0	43.988	44.105
58.5	0	44.03	44.135
58.6	0	44.03	44.165
58.7	0	44.051	44.195
58.8	0	44.051	44.225
58.9	0	44.051	44.255
59	0	44.051	44.285
59.1	0	44.072	44.31
59.2	0	44.072	44.33
59.3	0	44.072	44.35
59.4	0	44.072	44.37
59.5	0	44.072	44.39
59.6	0	44.093	44.41
59.7	0	44.093	44.43
59.8	0	44.093	44.45
59.9	0	44.135	44.47
60	0	44.156	44.49
60.1	0	44.156	44.515
60.2	0	44.177	44.545
60.3	0	44.177	44.575
60.4	0	44.219	44.605
60.5	0	44.24	44.635
60.6	0	44.24	44.665
60.7	0	44.24	44.695
60.8	0	44.261	44.725
60.9	0	44.302	44.755
61	0	44.302	44.785
61.1	0	44.344	44.805
61.2	0	44.365	44.815
61.3	0	44.407	44.825
61.4	0	44.407	44.835
61.5	0	44.449	44.845
61.6	0	44.47	44.855
61.7	0	44.512	44.865
61.8	0	44.554	44.875
61.9	0	44.554	44.885
62	0	44.596	44.895
62.1	0	44.617	44.905
62.2	0	44.638	44.915
62.3	0	44.68	44.925
62.4	0	44.7	44.935
62.5	0	44.742	44.945
62.6	0	44.763	44.955
62.7	0	44.805	44.965
62.8	0	44.826	44.975

62.9	0	44.847	44.985
63	0	44.889	44.995
63.1	0	44.91	45.005
63.2	0	44.931	45.015
63.3	0	44.952	45.025
63.4	0	44.994	45.035
63.5	0	45.015	45.045
63.6	0	45.036	45.055
63.7	0	45.078	45.065
63.8	0	45.098	45.075
63.9	0	45.119	45.085
64	0	45.161	45.095
64.1	0	45.182	45.115
64.2	0	45.203	45.145
64.3	0	45.224	45.175
64.4	0	45.266	45.205
64.5	0	45.287	45.235
64.6	0	45.329	45.265
64.7	0	45.35	45.295
64.8	0	45.392	45.325
64.9	0	45.413	45.355
65	0	45.455	45.385
65.1	0	45.476	45.415
65.2	0	45.517	45.445
65.3	0	45.559	45.475
65.4	0	45.58	45.505
65.5	0	45.622	45.535
65.6	0	45.643	45.565
65.7	0	45.685	45.595
65.8	0	45.727	45.625
65.9	0	45.748	45.655
66	0	45.79	45.685
66.1	0	45.811	45.715
66.2	0	45.853	45.745
66.3	0	45.894	45.775
66.4	0	45.915	45.805
66.5	0	45.957	45.835
66.6	0	45.999	45.865
66.7	0	46.02	45.895
66.8	0	46.062	45.925
66.9	0	46.083	45.955
67	0	46.125	45.985
67.1	0	46.167	46.015
67.2	0	46.188	46.045
67.3	0	46.23	46.075

67.4	0	46.23	46.105
67.5	0	46.292	46.135
67.6	0	46.313	46.165
67.7	0	46.355	46.195
67.8	0	46.376	46.225
67.9	0	46.376	46.255
68	0	46.439	46.285
68.1	0	46.481	46.31
68.2	0	46.523	46.33
68.3	0	46.523	46.35
68.4	0	46.544	46.37
68.5	0	46.607	46.39
68.6	0	46.628	46.41
68.7	0	46.669	46.43
68.8	0	46.669	46.45
68.9	0	46.69	46.47
69	0	46.753	46.49
69.1	0	46.795	46.515
69.2	0	46.795	46.545
69.3	0	46.816	46.575
69.4	0	46.858	46.605
69.5	0	46.9	46.635
69.6	0	46.9	46.665
69.7	0	46.921	46.695
69.8	0	46.942	46.725
69.9	0	47.005	46.755
70	0	47.026	46.785
70.1	0	47.026	46.805
70.2	0	47.067	46.815
70.3	0	47.109	46.825
70.4	0	47.151	46.835
70.5	0	47.151	46.845
70.6	0	47.172	46.855
70.7	0	47.193	46.865
70.8	0	47.214	46.875
70.9	0	47.256	46.885
71	0	47.256	46.895
71.1	0	47.277	46.905
71.2	0	47.298	46.915
71.3	0	47.298	46.925
71.4	0	47.319	46.935
71.5	0	47.319	46.945
71.6	0	47.319	46.955
71.7	0	47.34	46.965
71.8	0	47.34	46.975

71.9	0	47.361	46.985
72	0	47.361	46.995
72.1	0	47.361	47.005
72.2	0	47.361	47.015
72.3	0	47.382	47.025
72.4	0	47.382	47.035
72.5	0	47.403	47.045
72.6	0	47.403	47.055
72.7	0	47.424	47.065
72.8	0	47.424	47.075
72.9	0	47.424	47.085
73	0	47.445	47.095
73.1	0	47.445	47.105
73.2	0	47.465	47.115
73.3	0	47.465	47.125
73.4	0	47.465	47.135
73.5	0	47.465	47.145
73.6	0	47.465	47.155
73.7	0	47.465	47.165
73.8	0	47.445	47.175
73.9	0	47.424	47.185
74	0	47.424	47.195
74.1	0	47.403	47.205
74.2	0	47.403	47.215
74.3	0	47.403	47.225
74.4	0	47.382	47.235
74.5	0	47.382	47.245
74.6	0	47.382	47.255
74.7	0	47.361	47.265
74.8	0	47.361	47.275
74.9	0	47.361	47.285
75	0	47.34	47.295
75.1	0	47.34	47.295
75.2	0	47.319	47.285
75.3	0	47.319	47.275
75.4	0	47.298	47.265
75.5	0	47.298	47.255
75.6	0	47.298	47.245
75.7	0	47.277	47.235
75.8	0	47.277	47.225
75.9	0	47.277	47.215
76	0	47.256	47.205
76.1	0	47.256	47.195
76.2	0	47.235	47.185
76.3	0	47.235	47.175

76.4	0	47.235	47.165
76.5	0	47.214	47.155
76.6	0	47.214	47.145
76.7	0	47.193	47.135
76.8	0	47.193	47.125
76.9	0	47.193	47.115
77	0	47.172	47.105
77.1	0	47.172	47.095
77.2	0	47.172	47.085
77.3	0	47.151	47.075
77.4	0	47.13	47.065
77.5	0	47.13	47.055
77.6	0	47.13	47.045
77.7	0	47.13	47.035
77.8	0	47.088	47.025
77.9	0	47.088	47.015
78	0	47.067	47.005
78.1	0	47.067	46.995
78.2	0	47.047	46.985
78.3	0	47.026	46.975
78.4	0	47.026	46.965
78.5	0	47.026	46.955
78.6	0	47.026	46.945
78.7	0	47.005	46.935
78.8	0	47.005	46.925
78.9	0	47.005	46.915
79	0	46.984	46.905
79.1	0	46.984	46.9
79.2	0	46.984	46.9
79.3	0	46.984	46.9
79.4	0	46.984	46.9
79.5	0	46.963	46.9
79.6	0	46.963	46.9
79.7	0	46.963	46.9
79.8	0	46.942	46.9
79.9	0	46.942	46.9
80	0	46.921	46.9
80.1	0	46.921	46.9
80.2	0	46.921	46.9
80.3	0	46.921	46.9
80.4	0	46.921	46.9
80.5	0	46.921	46.9
80.6	0	46.921	46.9
80.7	0	46.9	46.9
80.8	0	46.9	46.9

80.9	0	46.9	46.9
81	0	46.879	46.9
81.1	0	46.879	46.905
81.2	0	46.879	46.915
81.3	0	46.858	46.925
81.4	0	46.858	46.935
81.5	0	46.858	46.945
81.6	0	46.858	46.955
81.7	0	46.858	46.965
81.8	0	46.858	46.975
81.9	0	46.858	46.985
82	0	46.858	46.995
82.1	0	46.858	47.005
82.2	0	46.858	47.015
82.3	0	46.858	47.025
82.4	0	46.858	47.035
82.5	0	46.858	47.045
82.6	0	46.858	47.055
82.7	0	46.837	47.065
82.8	0	46.837	47.075
82.9	0	46.858	47.085
83	0	46.858	47.095
83.1	0	46.858	47.1
83.2	0	46.879	47.1
83.3	0	46.879	47.1
83.4	0	46.879	47.1
83.5	0	46.9	47.1
83.6	0	46.9	47.1
83.7	0	46.921	47.1
83.8	0	46.921	47.1
83.9	0	46.942	47.1
84	0	46.942	47.1
84.1	0	46.963	47.105
84.2	0	46.963	47.115
84.3	0	46.984	47.125
84.4	0	46.984	47.135
84.5	0	47.005	47.145
84.6	0	47.005	47.155
84.7	0	47.026	47.165
84.8	0	47.026	47.175
84.9	0	47.047	47.185
85	0	47.047	47.195
85.1	0	47.067	47.195
85.2	0	47.067	47.185
85.3	0	47.088	47.175



85.4	0	47.088	47.165
85.5	0	47.109	47.155
85.6	0	47.109	47.145
85.7	0	47.13	47.135
85.8	0	47.13	47.125
85.9	0	47.13	47.115
86	0	47.13	47.105
86.1	0	47.13	47.095
86.2	0	47.151	47.085
86.3	0	47.151	47.075
86.4	0	47.151	47.065
86.5	0	47.151	47.055
86.6	0	47.151	47.045
86.7	0	47.13	47.035
86.8	0	47.13	47.025
86.9	0	47.109	47.015
87	0	47.109	47.005
87.1	0	47.109	46.995
87.2	0	47.088	46.985
87.3	0	47.088	46.975
87.4	0	47.088	46.965
87.5	0	47.088	46.955
87.6	0	47.067	46.945
87.7	0	47.047	46.935
87.8	0	47.026	46.925
87.9	0	47.026	46.915
88	0	47.026	46.905
88.1	0	47.005	46.88
88.2	0	46.963	46.84
88.3	0	46.942	46.8
88.4	0	46.942	46.76
88.5	0	46.9	46.72
88.6	0	46.879	46.68
88.7	0	46.837	46.64
88.8	0	46.837	46.6
88.9	0	46.795	46.56
89	0	46.774	46.52
89.1	0	46.753	46.49
89.2	0	46.711	46.47
89.3	0	46.711	46.45
89.4	0	46.669	46.43
89.5	0	46.649	46.41
89.6	0	46.628	46.39
89.7	0	46.607	46.37
89.8	0	46.586	46.35

89.9	0	46.565	46.33
90	0	46.544	46.31
90.1	0	46.523	46.295
90.2	0	46.502	46.285
90.3	0	46.481	46.275
90.4	0	46.46	46.265
90.5	0	46.46	46.255
90.6	0	46.439	46.245
90.7	0	46.439	46.235
90.8	0	46.439	46.225
90.9	0	46.418	46.215
91	0	46.418	46.205
91.1	0	46.418	46.205
91.2	0	46.418	46.215
91.3	0	46.418	46.225
91.4	0	46.397	46.235
91.5	0	46.397	46.245
91.6	0	46.397	46.255
91.7	0	46.397	46.265
91.8	0	46.397	46.275
91.9	0	46.397	46.285
92	0	46.397	46.295
92.1	0	46.418	46.31
92.2	0	46.418	46.33
92.3	0	46.439	46.35
92.4	0	46.439	46.37
92.5	0	46.46	46.39
92.6	0	46.481	46.41
92.7	0	46.502	46.43
92.8	0	46.523	46.45
92.9	0	46.544	46.47
93	0	46.565	46.49
93.1	0	46.586	46.52
93.2	0	46.628	46.56
93.3	0	46.649	46.6
93.4	0	46.669	46.64
93.5	0	46.69	46.68
93.6	0	46.732	46.72
93.7	0	46.753	46.76
93.8	0	46.774	46.8
93.9	0	46.816	46.84
94	0	46.837	46.88
94.1	0	46.879	46.91
94.2	0	46.9	46.93
94.3	0	46.921	46.95

94.4	0	46.963	46.97
94.5	0	46.984	46.99
94.6	0	47.005	47.01
94.7	0	47.047	47.03
94.8	0	47.067	47.05
94.9	0	47.088	47.07
95	0	47.13	47.09
95.1	0	47.151	47.115
95.2	0	47.172	47.145
95.3	0	47.172	47.175
95.4	0	47.235	47.205
95.5	0	47.277	47.235
95.6	0	47.298	47.265
95.7	0	47.34	47.295
95.8	0	47.361	47.325
95.9	0	47.361	47.355
96	0	47.424	47.385
96.1	0	47.465	47.415
96.2	0	47.486	47.445
96.3	0	47.528	47.475
96.4	0	47.528	47.505
96.5	0	47.57	47.535
96.6	0	47.612	47.565
96.7	0	47.633	47.595
96.8	0	47.633	47.625
96.9	0	47.654	47.655
97	0	47.717	47.685
97.1	0	47.738	47.715
97.2	0	47.78	47.745
97.3	0	47.78	47.775
97.4	0	47.801	47.805
97.5	0	47.863	47.835
97.6	0	47.884	47.865
97.7	0	47.884	47.895
97.8	0	47.905	47.925
97.9	0	47.947	47.955
98	0	47.989	47.985
98.1	0	47.989	48.01
98.2	0	48.031	48.03
98.3	0	48.052	48.05
98.4	0	48.115	48.07
98.5	0	48.136	48.09
98.6	0	48.136	48.11
98.7	0	48.157	48.13
98.8	0	48.199	48.15

98.9	0	48.261	48.17
99	0	48.261	48.19
99.1	0	48.282	48.215
99.2	0	48.303	48.245
99.3	0	48.345	48.275
99.4	0	48.366	48.305
99.5	0	48.387	48.335
99.6	0	48.429	48.365
99.7	0	48.45	48.395
99.8	0	48.471	48.425
99.9	0	48.513	48.455
100	0	48.534	48.485
100.1	0	48.555	48.515
100.2	0	48.597	48.545
100.3	0	48.618	48.575
100.4	0	48.638	48.605
100.5	0	48.68	48.635
100.6	0	48.701	48.665
100.7	0	48.722	48.695
100.8	0	48.764	48.725
100.9	0	48.785	48.755
101	0	48.827	48.785
101.1	0	48.848	48.815
101.2	0	48.869	48.845
101.3	0	48.911	48.875
101.4	0	48.932	48.905
101.5	0	48.974	48.935
101.6	0	48.995	48.965
101.7	0	49.016	48.995
101.8	0	49.057	49.025
101.9	0	49.078	49.055
102	0	49.099	49.085
102.1	0	49.12	49.105
102.2	0	49.162	49.115
102.3	0	49.183	49.125
102.4	0	49.225	49.135
102.5	0	49.246	49.145
102.6	0	49.246	49.155
102.7	0	49.267	49.165
102.8	0	49.288	49.175
102.9	0	49.309	49.185
103	0	49.309	49.195
103.1	0	49.309	49.195
103.2	0	49.309	49.185
103.3	0	49.309	49.175

103.4	0	49.309	49.165
103.5	0	49.309	49.155
103.6	0	49.309	49.145
103.7	0	49.309	49.135
103.8	0	49.309	49.125
103.9	0	49.309	49.115
104	0	49.288	49.105
104.1	0	49.288	49.1
104.2	0	49.267	49.1
104.3	0	49.246	49.1
104.4	0	49.225	49.1
104.5	0	49.204	49.1
104.6	0	49.162	49.1
104.7	0	49.162	49.1
104.8	0	49.12	49.1
104.9	0	49.099	49.1
105	0	49.078	49.1
105.1	0	49.057	49.095
105.2	0	49.036	49.085
105.3	0	49.036	49.075
105.4	0	49.016	49.065
105.5	0	48.995	49.055
105.6	0	48.995	49.045
105.7	0	48.974	49.035
105.8	0	48.953	49.025
105.9	0	48.932	49.015
106	0	48.932	49.005
106.1	0	48.932	49
106.2	0	48.911	49
106.3	0	48.911	49
106.4	0	48.911	49
106.5	0	48.911	49
106.6	0	48.911	49
106.7	0	48.911	49
106.8	0	48.911	49
106.9	0	48.911	49
107	0	48.911	49
107.1	0	48.911	49.005
107.2	0	48.911	49.015
107.3	0	48.911	49.025
107.4	0	48.911	49.035
107.5	0	48.911	49.045
107.6	0	48.911	49.055
107.7	0	48.911	49.065
107.8	0	48.911	49.075

107.9	0	48.911	49.085
108	0	48.911	49.095
108.1	0	48.911	49.105
108.2	0	48.911	49.115
108.3	0	48.911	49.125
108.4	0	48.932	49.135
108.5	0	48.953	49.145
108.6	0	48.974	49.155
108.7	0	48.995	49.165
108.8	0	49.016	49.175
108.9	0	49.036	49.185
109	0	49.057	49.195
109.1	0	49.078	49.205
109.2	0	49.099	49.215
109.3	0	49.12	49.225
109.4	0	49.141	49.235
109.5	0	49.183	49.245
109.6	0	49.204	49.255
109.7	0	49.225	49.265
109.8	0	49.246	49.275
109.9	0	49.288	49.285
110	0	49.309	49.295
110.1	0	49.33	49.305
110.2	0	49.351	49.315
110.3	0	49.372	49.325
110.4	0	49.393	49.335
110.5	0	49.414	49.345
110.6	0	49.434	49.355
110.7	0	49.455	49.365
110.8	0	49.476	49.375
110.9	0	49.497	49.385
111	0	49.518	49.395
111.1	0	49.539	49.405
111.2	0	49.56	49.415
111.3	0	49.581	49.425
111.4	0	49.602	49.435
111.5	0	49.623	49.445
111.6	0	49.644	49.455
111.7	0	49.644	49.465
111.8	0	49.665	49.475
111.9	0	49.686	49.485
112	0	49.686	49.495
112.1	0	49.707	49.5
112.2	0	49.707	49.5
112.3	0	49.707	49.5

112.4	0	49.728	49.5
112.5	0	49.728	49.5
112.6	0	49.728	49.5
112.7	0	49.749	49.5
112.8	0	49.749	49.5
112.9	0	49.749	49.5
113	0	49.749	49.5
113.1	0	49.749	49.5
113.2	0	49.749	49.5
113.3	0	49.728	49.5
113.4	0	49.707	49.5
113.5	0	49.707	49.5
113.6	0	49.707	49.5
113.7	0	49.686	49.5
113.8	0	49.686	49.5
113.9	0	49.665	49.5
114	0	49.665	49.5
114.1	0	49.644	49.495
114.2	0	49.623	49.485
114.3	0	49.602	49.475
114.4	0	49.602	49.465
114.5	0	49.581	49.455
114.6	0	49.581	49.445
114.7	0	49.56	49.435
114.8	0	49.56	49.425
114.9	0	49.56	49.415
115	0	49.539	49.405
115.1	0	49.518	49.385
115.2	0	49.518	49.355
115.3	0	49.518	49.325
115.4	0	49.497	49.295
115.5	0	49.476	49.265
115.6	0	49.455	49.235
115.7	0	49.455	49.205
115.8	0	49.455	49.175
115.9	0	49.434	49.145
116	0	49.414	49.115
116.1	0	49.393	49.09
116.2	0	49.393	49.07
116.3	0	49.393	49.05
116.4	0	49.372	49.03
116.5	0	49.351	49.01
116.6	0	49.33	48.99
116.7	0	49.33	48.97
116.8	0	49.309	48.95

116.9	0	49.288	48.93
117	0	49.267	48.91
117.1	0	49.267	48.885
117.2	0	49.246	48.855
117.3	0	49.225	48.825
117.4	0	49.162	48.795
117.5	0	49.057	48.765
117.6	0	49.057	48.735
117.7	0	48.995	48.705
117.8	0	48.932	48.675
117.9	0	48.806	48.645
118	0	48.806	48.615
118.1	0	48.722	48.59
118.2	0	48.659	48.57
118.3	0	48.597	48.55
118.4	0	48.471	48.53
118.5	0	48.471	48.51
118.6	0	48.408	48.49
118.7	0	48.345	48.47
118.8	0	48.282	48.45
118.9	0	48.22	48.43
119	0	48.178	48.41
119.1	0	48.115	48.385
119.2	0	48.052	48.355
119.3	0	47.989	48.325
119.4	0	47.947	48.295
119.5	0	47.884	48.265
119.6	0	47.822	48.235
119.7	0	47.78	48.205
119.8	0	47.717	48.175
119.9	0	47.675	48.145
120	0	47.612	48.115
120.1	0	47.57	48.08
120.2	0	47.528	48.04
120.3	0	47.528	48
120.4	0	47.528	47.96
120.5	0	47.549	47.92
120.6	0	47.57	47.88
120.7	0	47.591	47.84
120.8	0	47.612	47.8
120.9	0	47.633	47.76
121	0	47.654	47.72
121.1	0	47.654	47.685
121.2	0	47.696	47.655
121.3	0	47.696	47.625



121.4	0	47.717	47.595
121.5	0	47.738	47.565
121.6	0	47.759	47.535
121.7	0	47.78	47.505
121.8	0	47.801	47.475
121.9	0	47.801	47.445
122	0	47.822	47.415
122.1	0	47.842	47.395
122.2	0	47.842	47.385
122.3	0	47.863	47.375
122.4	0	47.884	47.365
122.5	0	47.905	47.355
122.6	0	47.926	47.345
122.7	0	47.947	47.335
122.8	0	47.968	47.325
122.9	0	47.968	47.315
123	0	47.989	47.305
123.1	0	48.01	47.31
123.2	0	48.031	47.33
123.3	0	48.031	47.35
123.4	0	48.052	47.37
123.5	0	48.052	47.39
123.6	0	48.052	47.41
123.7	0	48.073	47.43
123.8	0	48.073	47.45
123.9	0	48.073	47.47
124	0	48.073	47.49
124.1	0	48.073	47.515
124.2	0	48.073	47.545
124.3	0	48.073	47.575
124.4	0	48.094	47.605
124.5	0	48.094	47.635
124.6	0	48.094	47.665
124.7	0	48.094	47.695
124.8	0	48.094	47.725
124.9	0	48.115	47.755
125	0	48.115	47.785
125.1	0	48.115	47.805
125.2	0	48.115	47.815
125.3	0	48.136	47.825
125.4	0	48.136	47.835
125.5	0	48.157	47.845
125.6	0	48.157	47.855
125.7	0	48.157	47.865
125.8	0	48.178	47.875

125.9	0	48.178	47.885
126	0	48.199	47.895
126.1	0	48.199	47.905
126.2	0	48.199	47.915
126.3	0	48.199	47.925
126.4	0	48.199	47.935
126.5	0	48.199	47.945
126.6	0	48.199	47.955
126.7	0	48.199	47.965
126.8	0	48.178	47.975
126.9	0	48.178	47.985
127	0	48.157	47.995
127.1	0	48.136	47.995
127.2	0	48.094	47.985
127.3	0	48.094	47.975
127.4	0	48.073	47.965
127.5	0	48.052	47.955
127.6	0	48.031	47.945
127.7	0	48.01	47.935
127.8	0	48.01	47.925
127.9	0	47.989	47.915
128	0	47.968	47.905
128.1	0	47.947	47.9
128.2	0	47.947	47.9
128.3	0	47.926	47.9
128.4	0	47.905	47.9
128.5	0	47.905	47.9
128.6	0	47.884	47.9
128.7	0	47.884	47.9
128.8	0	47.863	47.9
128.9	0	47.863	47.9
129	0	47.842	47.9
129.1	0	47.842	47.9
129.2	0	47.842	47.9
129.3	0	47.822	47.9
129.4	0	47.801	47.9
129.5	0	47.801	47.9
129.6	0	47.78	47.9
129.7	0	47.759	47.9
129.8	0	47.759	47.9
129.9	0	47.738	47.9
130	0	47.738	47.9
130.1	0	47.717	47.905
130.2	0	47.717	47.915
130.3	0	47.696	47.925

130.4	0	47.675	47.935
130.5	0	47.675	47.945
130.6	0	47.654	47.955
130.7	0	47.633	47.965
130.8	0	47.633	47.975
130.9	0	47.612	47.985
131	0	47.591	47.995
131.1	0	47.591	48
131.2	0	47.591	48
131.3	0	47.612	48
131.4	0	47.612	48
131.5	0	47.633	48
131.6	0	47.633	48
131.7	0	47.654	48
131.8	0	47.675	48
131.9	0	47.696	48
132	0	47.696	48
132.1	0	47.717	48
132.2	0	47.738	48
132.3	0	47.738	48
132.4	0	47.759	48
132.5	0	47.78	48
132.6	0	47.78	48
132.7	0	47.801	48
132.8	0	47.801	48
132.9	0	47.801	48
133	0	47.801	48
133.1	0	47.801	47.995
133.2	0	47.801	47.985
133.3	0	47.801	47.975
133.4	0	47.78	47.965
133.5	0	47.78	47.955
133.6	0	47.78	47.945
133.7	0	47.759	47.935
133.8	0	47.738	47.925
133.9	0	47.738	47.915
134	0	47.696	47.905
134.1	0	47.675	47.87
134.2	0	47.675	47.81
134.3	0	47.675	47.75
134.4	0	47.612	47.69
134.5	0	47.486	47.63
134.6	0	47.424	47.57
134.7	0	47.34	47.51
134.8	0	47.34	47.45

134.9	0	47.256	47.39
135	0	47.109	47.33
135.1	0	47.026	47.235
135.2	0	47.026	47.105
135.3	0	46.942	46.975
135.4	0	46.774	46.845
135.5	0	46.69	46.715
135.6	0	46.69	46.585
135.7	0	46.607	46.455
135.8	0	46.481	46.325
135.9	0	46.167	46.195
136	0	45.915	46.065
136.1	0	45.915	45.865
136.2	0	45.601	45.595
136.3	0	45.266	45.325
136.4	0	44.575	45.055
136.5	0	44.575	44.785
136.6	0	44.219	44.515
136.7	0	43.884	44.245
136.8	0	43.213	43.975
136.9	0	43.213	43.705
137	0	42.878	43.435
137.1	0	42.606	43.195
137.2	0	42.438	42.985
137.3	0	42.208	42.775
137.4	0	42.208	42.565
137.5	0	42.124	42.355
137.6	0	42.019	42.145
137.7	0	41.935	41.935
137.8	0	41.81	41.725
137.9	0	41.705	41.515
138	0	41.579	41.305
138.1	0	41.454	41.115
138.2	0	41.328	40.945
138.3	0	41.202	40.775
138.4	0	41.077	40.605
138.5	0	40.951	40.435
138.6	0	40.825	40.265
138.7	0	40.7	40.095
138.8	0	40.574	39.925
138.9	0	40.448	39.755
139	0	40.344	39.585
139.1	0	40.26	39.485
139.2	0	40.176	39.455
139.3	0	40.092	39.425

139.4	0	40.008	39.395
139.5	0	39.925	39.365
139.6	0	39.862	39.335
139.7	0	39.778	39.305
139.8	0	39.694	39.275
139.9	0	39.631	39.245
140	0	39.569	39.215
140.1	0	39.506	39.19
140.2	0	39.464	39.17
140.3	0	39.401	39.15
140.4	0	39.359	39.13
140.5	0	39.317	39.11
140.6	0	39.275	39.09
140.7	0	39.233	39.07
140.8	0	39.191	39.05
140.9	0	39.15	39.03
141	0	39.108	39.01
141.1	0	39.045	39
141.2	0	39.003	39
141.3	0	38.961	39
141.4	0	38.919	39
141.5	0	38.898	39
141.6	0	38.856	39
141.7	0	38.835	39
141.8	0	38.814	39
141.9	0	38.793	39
142	0	38.793	39
142.1	0	38.773	39.005
142.2	0	38.793	39.015
142.3	0	38.793	39.025
142.4	0	38.793	39.035
142.5	0	38.814	39.045
142.6	0	38.814	39.055
142.7	0	38.877	39.065
142.8	0	38.898	39.075
142.9	0	38.961	39.085
143	0	38.961	39.095
143.1	0	39.066	39.12
143.2	0	39.108	39.16
143.3	0	39.171	39.2
143.4	0	39.233	39.24
143.5	0	39.233	39.28
143.6	0	39.338	39.32
143.7	0	39.401	39.36
143.8	0	39.464	39.4

143.9	0	39.464	39.44
144	0	39.506	39.48
144.1	0	39.61	39.53
144.2	0	39.652	39.59
144.3	0	39.652	39.65
144.4	0	39.715	39.71
144.5	0	39.799	39.77
144.6	0	39.841	39.83
144.7	0	39.883	39.89
144.8	0	39.883	39.95
144.9	0	39.946	40.01
145	0	40.092	40.07
145.1	0	40.155	40.145
145.2	0	40.155	40.235
145.3	0	40.239	40.325
145.4	0	40.323	40.415
145.5	0	40.469	40.505
145.6	0	40.469	40.595
145.7	0	40.553	40.685
145.8	0	40.637	40.775
145.9	0	40.825	40.865
146	0	40.825	40.955
146.1	0	40.93	41.05
146.2	0	41.014	41.15
146.3	0	41.119	41.25
146.4	0	41.328	41.35
146.5	0	41.328	41.45
146.6	0	41.454	41.55
146.7	0	41.6	41.65
146.8	0	41.747	41.75
146.9	0	41.915	41.85
147	0	42.082	41.95
147.1	0	42.229	42.055
147.2	0	42.396	42.165
147.3	0	42.396	42.275
147.4	0	42.711	42.385
147.5	0	42.857	42.495
147.6	0	42.983	42.605
147.7	0	43.109	42.715
147.8	0	43.213	42.825
147.9	0	43.318	42.935
148	0	43.423	43.045
148.1	0	43.527	43.13
148.2	0	43.611	43.19
148.3	0	43.695	43.25

148.4	0	43.779	43.31
148.5	0	43.863	43.37
148.6	0	43.946	43.43
148.7	0	44.03	43.49
148.8	0	44.114	43.55
148.9	0	44.198	43.61
149	0	44.282	43.67
149.1	0	44.365	43.72
149.2	0	44.449	43.76
149.3	0	44.512	43.8
149.4	0	44.554	43.84
149.5	0	44.617	43.88
149.6	0	44.659	43.92
149.7	0	44.68	43.96
149.8	0	44.721	44
149.9	0	44.742	44.04
150	0	44.763	44.08
150.1	0	44.763	44.11
150.2	0	44.763	44.13
150.3	0	44.763	44.15
150.4	0	44.742	44.17
150.5	0	44.721	44.19
150.6	0	44.68	44.21
150.7	0	44.638	44.23
150.8	0	44.617	44.25
150.9	0	44.575	44.27
151	0	44.533	44.29
151.1	0	44.491	44.305
151.2	0	44.47	44.315
151.3	0	44.449	44.325
151.4	0	44.449	44.335
151.5	0	44.449	44.345
151.6	0	44.449	44.355
151.7	0	44.47	44.365
151.8	0	44.47	44.375
151.9	0	44.491	44.385
152	0	44.512	44.395
152.1	0	44.512	44.41
152.2	0	44.554	44.43
152.3	0	44.575	44.45
152.4	0	44.596	44.471
152.5	0	44.617	44.49
152.6	0	44.617	44.51
152.7	0	44.659	44.53
152.8	0	44.68	44.55

152.9	0	44.7	44.57
153	0	44.7	44.59
153.1	0	44.742	44.605
153.2	0	44.742	44.615
153.3	0	44.763	44.625
153.4	0	44.763	44.635
153.5	0	44.784	44.645
153.6	0	44.826	44.655
153.7	0	44.826	44.665
153.8	0	44.847	44.675
153.9	0	44.847	44.685
154	0	44.868	44.695
154.1	0	44.889	44.71
154.2	0	44.91	44.73
154.3	0	44.91	44.75
154.4	0	44.931	44.77
154.5	0	44.952	44.79
154.6	0	44.994	44.81
154.7	0	45.015	44.83
154.8	0	45.015	44.85
154.9	0	45.036	44.87
155	0	45.078	44.89
155.1	0	45.14	44.915
155.2	0	45.14	44.945
155.3	0	45.203	44.975
155.4	0	45.224	45.005
155.5	0	45.287	45.035
155.6	0	45.371	45.065
155.7	0	45.371	45.095
155.8	0	45.413	45.125
155.9	0	45.455	45.155
156	0	45.517	45.185
156.1	0	45.559	45.225
156.2	0	45.601	45.275
156.3	0	45.643	45.325
156.4	0	45.706	45.375
156.5	0	45.748	45.425
156.6	0	45.79	45.475
156.7	0	45.832	45.525
156.8	0	45.894	45.575
156.9	0	45.936	45.625
157	0	45.978	45.675
157.1	0	46.041	45.71
157.2	0	46.083	45.73
157.3	0	46.125	45.75



157.4	0	46.167	45.77
157.5	0	46.209	45.79
157.6	0	46.23	45.81
157.7	0	46.251	45.83
157.8	0	46.292	45.85
157.9	0	46.313	45.87
158	0	46.334	45.89
158.1	0	46.355	45.92
158.2	0	46.376	45.96
158.3	0	46.397	46
158.4	0	46.418	46.04
158.5	0	46.418	46.08
158.6	0	46.439	46.12
158.7	0	46.481	46.16
158.8	0	46.481	46.2
158.9	0	46.523	46.24
159	0	46.544	46.28
159.1	0	46.565	46.325
159.2	0	46.586	46.375
159.3	0	46.607	46.425
159.4	0	46.628	46.475
159.5	0	46.649	46.525
159.6	0	46.669	46.575
159.7	0	46.69	46.625
159.8	0	46.711	46.675
159.9	0	46.732	46.725
160	0	46.753	46.775
160.1	0	46.774	46.805
160.2	0	46.774	46.815
160.3	0	46.816	46.825
160.4	0	46.837	46.835
160.5	0	46.858	46.845
160.6	0	46.879	46.855
160.7	0	46.9	46.865
160.8	0	46.921	46.875
160.9	0	46.921	46.885
161	0	46.942	46.895
161.1	0	46.963	46.905
161.2	0	46.963	46.915
161.3	0	46.984	46.925
161.4	0	46.984	46.935
161.5	0	47.005	46.945
161.6	0	47.005	46.955
161.7	0	47.005	46.965
161.8	0	47.005	46.975

161.9	0	47.005	46.985
162	0	47.026	46.995
162.1	0	47.026	47.005
162.2	0	47.026	47.015
162.3	0	47.026	47.025
162.4	0	47.026	47.035
162.5	0	47.026	47.045
162.6	0	47.026	47.055
162.7	0	47.026	47.065
162.8	0	47.047	47.075
162.9	0	47.047	47.085
163	0	47.067	47.095
163.1	0	47.067	47.125
163.2	0	47.088	47.175
163.3	0	47.13	47.225
163.4	0	47.172	47.275
163.5	0	47.193	47.325
163.6	0	47.193	47.375
163.7	0	47.214	47.425
163.8	0	47.277	47.475
163.9	0	47.319	47.525
164	0	47.319	47.575
164.1	0	47.382	47.615
164.2	0	47.424	47.645
164.3	0	47.528	47.675
164.4	0	47.57	47.705
164.5	0	47.57	47.735
164.6	0	47.633	47.765
164.7	0	47.675	47.795
164.8	0	47.78	47.825
164.9	0	47.78	47.855
165	0	47.842	47.885
165.1	0	47.884	47.905
165.2	0	47.926	47.915
165.3	0	48.01	47.925
165.4	0	48.01	47.935
165.5	0	48.031	47.945
165.6	0	48.073	47.955
165.7	0	48.094	47.965
165.8	0	48.115	47.975
165.9	0	48.136	47.985
166	0	48.157	47.995
166.1	0	48.178	48
166.2	0	48.178	48
166.3	0	48.199	48

166.4	0	48.22	48
166.5	0	48.22	48
166.6	0	48.22	48
166.7	0	48.22	48
166.8	0	48.199	48
166.9	0	48.199	48
167	0	48.178	48
167.1	0	48.157	47.995
167.2	0	48.136	47.985
167.3	0	48.094	47.975
167.4	0	48.031	47.965
167.5	0	47.968	47.955
167.6	0	47.905	47.945
167.7	0	47.842	47.935
167.8	0	47.801	47.925
167.9	0	47.738	47.915
168	0	47.675	47.905
168.1	0	47.612	47.895
168.2	0	47.57	47.885
168.3	0	47.528	47.875
168.4	0	47.486	47.865
168.5	0	47.445	47.855
168.6	0	47.424	47.845
168.7	0	47.403	47.835
168.8	0	47.382	47.825
168.9	0	47.361	47.815
169	0	47.361	47.805
169.1	0	47.34	47.775
169.2	0	47.34	47.725
169.3	0	47.319	47.675
169.4	0	47.298	47.625
169.5	0	47.277	47.575
169.6	0	47.256	47.525
169.7	0	47.214	47.475
169.8	0	47.172	47.425
169.9	0	47.109	47.375
170	0	47.047	47.325
170.1	0	47.005	47.27
170.2	0	46.942	47.21
170.3	0	46.9	47.15
170.4	0	46.837	47.09
170.5	0	46.795	47.03
170.6	0	46.732	46.97
170.7	0	46.69	46.91
170.8	0	46.628	46.85

170.9	0	46.586	46.79
171	0	46.544	46.73
171.1	0	46.481	46.675
171.2	0	46.439	46.625
171.3	0	46.397	46.575
171.4	0	46.355	46.525
171.5	0	46.313	46.475
171.6	0	46.313	46.425
171.7	0	46.251	46.375
171.8	0	46.209	46.325
171.9	0	46.167	46.275
172	0	46.167	46.225
172.1	0	46.146	46.185
172.2	0	46.083	46.155
172.3	0	46.062	46.125
172.4	0	46.02	46.095
172.5	0	46.02	46.065
172.6	0	46.02	46.035
172.7	0	45.999	46.005
172.8	0	45.999	45.975
172.9	0	45.999	45.945
173	0	45.999	45.915
173.1	0	45.999	45.89
173.2	0	45.978	45.87
173.3	0	45.978	45.85
173.4	0	45.978	45.83
173.5	0	45.978	45.81
173.6	0	45.978	45.79
173.7	0	45.978	45.77
173.8	0	45.978	45.75
173.9	0	45.978	45.73
174	0	45.978	45.71
174.1	0	45.978	45.69
174.2	0	45.936	45.67
174.3	0	45.936	45.65
174.4	0	45.915	45.63
174.5	0	45.894	45.61
174.6	0	45.853	45.59
174.7	0	45.853	45.57
174.8	0	45.832	45.55
174.9	0	45.811	45.53
175	0	45.79	45.51
175.1	0	45.769	45.495
175.2	0	45.748	45.485
175.3	0	45.727	45.475

175.4	0	45.706	45.465
175.5	0	45.685	45.455
175.6	0	45.643	45.445
175.7	0	45.622	45.435
175.8	0	45.601	45.425
175.9	0	45.58	45.415
176	0	45.559	45.405
176.1	0	45.538	45.395
176.2	0	45.517	45.385
176.3	0	45.496	45.375
176.4	0	45.476	45.365
176.5	0	45.434	45.355
176.6	0	45.413	45.345
176.7	0	45.392	45.335
176.8	0	45.371	45.325
176.9	0	45.35	45.315
177	0	45.329	45.305
177.1	0	45.308	45.285
177.2	0	45.287	45.255
177.3	0	45.245	45.225
177.4	0	45.224	45.195
177.5	0	45.182	45.165
177.6	0	45.161	45.135
177.7	0	45.098	45.105
177.8	0	45.036	45.075
177.9	0	44.973	45.045
178	0	44.91	45.015
178.1	0	44.847	44.95
178.2	0	44.784	44.85
178.3	0	44.7	44.75
178.4	0	44.638	44.65
178.5	0	44.554	44.55
178.6	0	44.47	44.45
178.7	0	44.407	44.35
178.8	0	44.323	44.25
178.9	0	44.24	44.15
179	0	44.156	44.05
179.1	0	44.093	43.955
179.2	0	44.009	43.865
179.3	0	43.925	43.775
179.4	0	43.842	43.685
179.5	0	43.779	43.595
179.6	0	43.695	43.505
179.7	0	43.611	43.415
179.8	0	43.527	43.325

179.9	0	43.465	43.235
180	0	43.381	43.145
180.1	0	43.297	43.055
180.2	0	43.213	42.965
180.3	0	43.15	42.875
180.4	0	43.067	42.785
180.5	0	43.067	42.695
180.6	0	42.899	42.605
180.7	0	42.836	42.515
180.8	0	42.752	42.425
180.9	0	42.669	42.335
181	0	42.669	42.245
181.1	0	42.522	42.165
181.2	0	42.438	42.095
181.3	0	42.375	42.025
181.4	0	42.292	41.955
181.5	0	42.292	41.885
181.6	0	42.145	41.815
181.7	0	42.061	41.745
181.8	0	41.977	41.675
181.9	0	41.977	41.605
182	0	41.915	41.535
182.1	0	41.789	41.5
182.2	0	41.726	41.5
182.3	0	41.726	41.5
182.4	0	41.684	41.5
182.5	0	41.642	41.5
182.6	0	41.6	41.5
182.7	0	41.579	41.5
182.8	0	41.579	41.5
182.9	0	41.558	41.5
183	0	41.538	41.5
183.1	0	41.558	41.53
183.2	0	41.558	41.59
183.3	0	41.558	41.65
183.4	0	41.579	41.71
183.5	0	41.6	41.77
183.6	0	41.6	41.83
183.7	0	41.621	41.89
183.8	0	41.663	41.95
183.9	0	41.705	42.01
184	0	41.789	42.07
184.1	0	41.789	42.14
184.2	0	41.831	42.22
184.3	0	41.894	42.3

184.4	0	41.998	42.38
184.5	0	41.998	42.46
184.6	0	42.061	42.54
184.7	0	42.124	42.62
184.8	0	42.187	42.7
184.9	0	42.25	42.78
185	0	42.333	42.86
185.1	0	42.396	42.93
185.2	0	42.459	42.99
185.3	0	42.522	43.05
185.4	0	42.585	43.11
185.5	0	42.648	43.17
185.6	0	42.731	43.23
185.7	0	42.794	43.29
185.8	0	42.857	43.35
185.9	0	42.92	43.41
186	0	42.983	43.47
186.1	0	43.046	43.52
186.2	0	43.046	43.56
186.3	0	43.171	43.6
186.4	0	43.234	43.64
186.5	0	43.297	43.68
186.6	0	43.36	43.72
186.7	0	43.402	43.76
186.8	0	43.465	43.8
186.9	0	43.507	43.84
187	0	43.548	43.88
187.1	0	43.569	43.885
187.2	0	43.59	43.855
187.3	0	43.611	43.825
187.4	0	43.611	43.795
187.5	0	43.59	43.765
187.6	0	43.59	43.735
187.7	0	43.548	43.705
187.8	0	43.507	43.675
187.9	0	43.444	43.645
188	0	43.381	43.615
188.1	0	43.318	43.585
188.2	0	43.234	43.555
188.3	0	43.171	43.525
188.4	0	43.088	43.495
188.5	0	43.046	43.465
188.6	0	43.004	43.435
188.7	0	42.962	43.405
188.8	0	42.941	43.375

188.9	0	42.92	43.345
189	0	42.92	43.315
189.1	0	42.92	43.285
189.2	0	42.92	43.255
189.3	0	42.92	43.225
189.4	0	42.92	43.195
189.5	0	42.92	43.165
189.6	0	42.92	43.135
189.7	0	42.92	43.105
189.8	0	42.92	43.075
189.9	0	42.962	43.045
190	0	42.962	43.015
190.1	0	42.983	43.005
190.2	0	43.004	43.015
190.3	0	43.004	43.025
190.4	0	43.046	43.035
190.5	0	43.067	43.045
190.6	0	43.067	43.055
190.7	0	43.067	43.065
190.8	0	43.088	43.075
190.9	0	43.088	43.085
191	0	43.088	43.095
191.1	0	43.088	43.115
191.2	0	43.088	43.145
191.3	0	43.129	43.175
191.4	0	43.15	43.205
191.5	0	43.171	43.235
191.6	0	43.171	43.265
191.7	0	43.192	43.295
191.8	0	43.255	43.325
191.9	0	43.297	43.355
192	0	43.297	43.385
192.1	0	43.318	43.425
192.2	0	43.36	43.475
192.3	0	43.423	43.525
192.4	0	43.465	43.575
192.5	0	43.465	43.625
192.6	0	43.507	43.675
192.7	0	43.611	43.725
192.8	0	43.674	43.775
192.9	0	43.674	43.825
193	0	43.716	43.875
193.1	0	43.779	43.92
193.2	0	43.884	43.96
193.3	0	43.884	44



193.4	0	43.946	44.04
193.5	0	43.988	44.08
193.6	0	44.051	44.12
193.7	0	44.177	44.16
193.8	0	44.177	44.2
193.9	0	44.219	44.24
194	0	44.282	44.28
194.1	0	44.344	44.315
194.2	0	44.386	44.345
194.3	0	44.449	44.375
194.4	0	44.491	44.405
194.5	0	44.533	44.435
194.6	0	44.596	44.465
194.7	0	44.638	44.495
194.8	0	44.68	44.525
194.9	0	44.721	44.555
195	0	44.784	44.585
195.1	0	44.826	44.615
195.2	0	44.868	44.645
195.3	0	44.91	44.675
195.4	0	44.931	44.705
195.5	0	44.952	44.735
195.6	0	44.973	44.765
195.7	0	44.994	44.795
195.8	0	45.015	44.825
195.9	0	45.036	44.855
196	0	45.036	44.885
196.1	0	45.036	44.895
196.2	0	45.036	44.885
196.3	0	45.015	44.875
196.4	0	44.994	44.865
196.5	0	44.952	44.855
196.6	0	44.931	44.845
196.7	0	44.868	44.835
196.8	0	44.826	44.825
196.9	0	44.763	44.815
197	0	44.721	44.805
197.1	0	44.659	44.78
197.2	0	44.617	44.74
197.3	0	44.554	44.7
197.4	0	44.491	44.66
197.5	0	44.47	44.62
197.6	0	44.407	44.58
197.7	0	44.407	44.54
197.8	0	44.386	44.5

197.9	0	44.365	44.46
198	0	44.365	44.42
198.1	0	44.344	44.375
198.2	0	44.323	44.325
198.3	0	44.302	44.275
198.4	0	44.282	44.225
198.5	0	44.24	44.175
198.6	0	44.198	44.125
198.7	0	44.135	44.075
198.8	0	44.072	44.025
198.9	0	44.03	43.975
199	0	43.988	43.925
199.1	0	43.925	43.875
199.2	0	43.925	43.825
199.3	0	43.821	43.775
199.4	0	43.758	43.725
199.5	0	43.716	43.675
199.6	0	43.716	43.625
199.7	0	43.611	43.575
199.8	0	43.569	43.525
199.9	0	43.507	43.475
200	0	43.507	43.425
200.1	0	43.465	43.39
200.2	0	43.444	43.37
200.3	0	43.423	43.35
200.4	0	43.402	43.33
200.5	0	43.402	43.31
200.6	0	43.381	43.29
200.7	0	43.36	43.27
200.8	0	43.339	43.25
200.9	0	43.339	43.23
201	0	43.339	43.21
201.1	0	43.297	43.2
201.2	0	43.297	43.2
201.3	0	43.297	43.2
201.4	0	43.276	43.2
201.5	0	43.276	43.2
201.6	0	43.276	43.2
201.7	0	43.276	43.2
201.8	0	43.276	43.2
201.9	0	43.276	43.2
202	0	43.276	43.2
202.1	0	43.276	43.195
202.2	0	43.276	43.185
202.3	0	43.297	43.175

202.4	0	43.297	43.165
202.5	0	43.318	43.155
202.6	0	43.318	43.145
202.7	0	43.318	43.135
202.8	0	43.318	43.125
202.9	0	43.297	43.115
203	0	43.297	43.105
203.1	0	43.276	43.095
203.2	0	43.255	43.085
203.3	0	43.213	43.075
203.4	0	43.171	43.065
203.5	0	43.171	43.055
203.6	0	43.129	43.045
203.7	0	43.088	43.035
203.8	0	43.067	43.025
203.9	0	43.046	43.015
204	0	43.025	43.005
204.1	0	43.025	43
204.2	0	43.025	43
204.3	0	43.004	43
204.4	0	43.004	43
204.5	0	43.004	43
204.6	0	43.025	43
204.7	0	43.025	43
204.8	0	43.025	43
204.9	0	43.025	43
205	0	43.046	43
205.1	0	43.046	43.005
205.2	0	43.046	43.015
205.3	0	43.067	43.025
205.4	0	43.067	43.035
205.5	0	43.088	43.045
205.6	0	43.109	43.055
205.7	0	43.15	43.065
205.8	0	43.192	43.075
205.9	0	43.213	43.085
206	0	43.276	43.095
206.1	0	43.318	43.115
206.2	0	43.36	43.145
206.3	0	43.402	43.175
206.4	0	43.465	43.205
206.5	0	43.507	43.235
206.6	0	43.569	43.265
206.7	0	43.611	43.295
206.8	0	43.653	43.325

206.9	0	43.716	43.355
207	0	43.758	43.385
207.1	0	43.8	43.425
207.2	0	43.842	43.475
207.3	0	43.863	43.525
207.4	0	43.884	43.575
207.5	0	43.904	43.625
207.6	0	43.925	43.675
207.7	0	43.925	43.725
207.8	0	43.946	43.775
207.9	0	43.925	43.825
208	0	43.925	43.875
208.1	0	43.925	43.905
208.2	0	43.904	43.915
208.3	0	43.884	43.925
208.4	0	43.863	43.935
208.5	0	43.821	43.945
208.6	0	43.8	43.955
208.7	0	43.8	43.965
208.8	0	43.716	43.975
208.9	0	43.695	43.985
209	0	43.632	43.995
209.1	0	43.632	43.975
209.2	0	43.548	43.925
209.3	0	43.486	43.875
209.4	0	43.444	43.825
209.5	0	43.381	43.775
209.6	0	43.381	43.725
209.7	0	43.276	43.675
209.8	0	43.234	43.625
209.9	0	43.192	43.575
210	0	43.192	43.525
210.1	0	43.15	43.455
210.2	0	43.067	43.365
210.3	0	43.025	43.275
210.4	0	42.983	43.185
210.5	0	42.983	43.095
210.6	0	42.92	43.005
210.7	0	42.815	42.915
210.8	0	42.752	42.825
210.9	0	42.752	42.735
211	0	42.711	42.645
211.1	0	42.564	42.545
211.2	0	42.501	42.435
211.3	0	42.501	42.325

211.4	0	42.417	42.215
211.5	0	42.354	42.105
211.6	0	42.208	41.995
211.7	0	42.124	41.885
211.8	0	42.124	41.775
211.9	0	42.04	41.665
212	0	41.977	41.555
212.1	0	41.894	41.46
212.2	0	41.894	41.38
212.3	0	41.747	41.3
212.4	0	41.663	41.22
212.5	0	41.6	41.14
212.6	0	41.433	41.06
212.7	0	41.433	40.98
212.8	0	41.37	40.9
212.9	0	41.286	40.82
213	0	41.223	40.74
213.1	0	41.14	40.665
213.2	0	41.056	40.595
213.3	0	40.993	40.525
213.4	0	40.909	40.455
213.5	0	40.846	40.385
213.6	0	40.762	40.315
213.7	0	40.679	40.245
213.8	0	40.616	40.175
213.9	0	40.532	40.105
214	0	40.469	40.035
214.1	0	40.385	40
214.2	0	40.344	40
214.3	0	40.302	40
214.4	0	40.26	40
214.5	0	40.239	40
214.6	0	40.218	40
214.7	0	40.197	40
214.8	0	40.197	40
214.9	0	40.197	40
215	0	40.197	40
215.1	0	40.218	40.015
215.2	0	40.218	40.045
215.3	0	40.239	40.075
215.4	0	40.239	40.105
215.5	0	40.26	40.135
215.6	0	40.281	40.165
215.7	0	40.323	40.195
215.8	0	40.364	40.225

215.9	0	40.406	40.255
216	0	40.448	40.285
216.1	0	40.49	40.335
216.2	0	40.553	40.405
216.3	0	40.616	40.475
216.4	0	40.658	40.545
216.5	0	40.742	40.615
216.6	0	40.804	40.685
216.7	0	40.867	40.755
216.8	0	40.93	40.825
216.9	0	40.993	40.895
217	0	41.077	40.965
217.1	0	41.14	41.05
217.2	0	41.202	41.15
217.3	0	41.265	41.25
217.4	0	41.328	41.35
217.5	0	41.391	41.45
217.6	0	41.454	41.55
217.7	0	41.517	41.65
217.8	0	41.579	41.75
217.9	0	41.642	41.85
218	0	41.705	41.95
218.1	0	41.768	42.035
218.2	0	41.831	42.105
218.3	0	41.894	42.175
218.4	0	41.956	42.245
218.5	0	42.019	42.315
218.6	0	42.082	42.385
218.7	0	42.082	42.455
218.8	0	42.208	42.525
218.9	0	42.271	42.595
219	0	42.333	42.665
219.1	0	42.333	42.72
219.2	0	42.396	42.76
219.3	0	42.522	42.8
219.4	0	42.585	42.84
219.5	0	42.648	42.88
219.6	0	42.648	42.92
219.7	0	42.773	42.96
219.8	0	42.815	43
219.9	0	42.857	43.04
220	0	42.857	43.08
220.1	0	42.92	43.105
220.2	0	42.983	43.115
220.3	0	43.004	43.125

220.4	0	43.025	43.135
220.5	0	43.025	43.145
220.6	0	43.046	43.155
220.7	0	43.109	43.165
220.8	0	43.129	43.175
220.9	0	43.129	43.185
221	0	43.15	43.195
221.1	0	43.192	43.21
221.2	0	43.213	43.23
221.3	0	43.213	43.25
221.4	0	43.234	43.27
221.5	0	43.255	43.29
221.6	0	43.255	43.31
221.7	0	43.297	43.33
221.8	0	43.297	43.35
221.9	0	43.318	43.37
222	0	43.339	43.39
222.1	0	43.381	43.425
222.2	0	43.381	43.475
222.3	0	43.402	43.525
222.4	0	43.423	43.575
222.5	0	43.444	43.625
222.6	0	43.486	43.675
222.7	0	43.527	43.725
222.8	0	43.569	43.775
222.9	0	43.59	43.825
223	0	43.632	43.875
223.1	0	43.674	43.92
223.2	0	43.716	43.96
223.3	0	43.758	44
223.4	0	43.8	44.04
223.5	0	43.842	44.08
223.6	0	43.884	44.12
223.7	0	43.925	44.16
223.8	0	43.988	44.2
223.9	0	44.03	44.24
224	0	44.093	44.28
224.1	0	44.135	44.32
224.2	0	44.198	44.36
224.3	0	44.24	44.4
224.4	0	44.302	44.44
224.5	0	44.344	44.48
224.6	0	44.407	44.52
224.7	0	44.449	44.56
224.8	0	44.512	44.6

224.9	0	44.554	44.64
225	0	44.617	44.68
225.1	0	44.659	44.72
225.2	0	44.659	44.76
225.3	0	44.721	44.8
225.4	0	44.763	44.84
225.5	0	44.805	44.88
225.6	0	44.826	44.92
225.7	0	44.868	44.96
225.8	0	44.91	45
225.9	0	44.952	45.04
226	0	44.973	45.08
226.1	0	45.015	45.115
226.2	0	45.057	45.145
226.3	0	45.098	45.175
226.4	0	45.14	45.205
226.5	0	45.182	45.235
226.6	0	45.224	45.265
226.7	0	45.266	45.295
226.8	0	45.308	45.325
226.9	0	45.35	45.355
227	0	45.413	45.385
227.1	0	45.455	45.42
227.2	0	45.496	45.46
227.3	0	45.559	45.5
227.4	0	45.601	45.54
227.5	0	45.643	45.58
227.6	0	45.706	45.62
227.7	0	45.748	45.66
227.8	0	45.811	45.7
227.9	0	45.811	45.74
228	0	45.915	45.78
228.1	0	45.957	45.835
228.2	0	46.02	45.905
228.3	0	46.062	45.975
228.4	0	46.062	46.045
228.5	0	46.167	46.115
228.6	0	46.23	46.185
228.7	0	46.292	46.255
228.8	0	46.292	46.325
228.9	0	46.397	46.395
229	0	46.439	46.465
229.1	0	46.502	46.52
229.2	0	46.502	46.56
229.3	0	46.565	46.6



229.4	0	46.669	46.64
229.5	0	46.711	46.68
229.6	0	46.774	46.72
229.7	0	46.774	46.76
229.8	0	46.816	46.8
229.9	0	46.921	46.84
230	0	46.984	46.88
230.1	0	46.984	46.915
230.2	0	47.026	46.945
230.3	0	47.088	46.975
230.4	0	47.172	47.005
230.5	0	47.235	47.035
230.6	0	47.235	47.065
230.7	0	47.277	47.095
230.8	0	47.319	47.125
230.9	0	47.403	47.155
231	0	47.403	47.185
231.1	0	47.445	47.21
231.2	0	47.486	47.23
231.3	0	47.528	47.25
231.4	0	47.549	47.27
231.5	0	47.591	47.29
231.6	0	47.633	47.31
231.7	0	47.654	47.33
231.8	0	47.696	47.35
231.9	0	47.696	47.37
232	0	47.717	47.39
232.1	0	47.717	47.395
232.2	0	47.738	47.385
232.3	0	47.759	47.375
232.4	0	47.78	47.365
232.5	0	47.801	47.355
232.6	0	47.801	47.345
232.7	0	47.822	47.335
232.8	0	47.842	47.325
232.9	0	47.842	47.315
233	0	47.842	47.305
233.1	0	47.842	47.3
233.2	0	47.822	47.3
233.3	0	47.822	47.3
233.4	0	47.801	47.3
233.5	0	47.78	47.3
233.6	0	47.738	47.3
233.7	0	47.696	47.3
233.8	0	47.633	47.3

233.9	0	47.57	47.3
234	0	47.507	47.3
234.1	0	47.445	47.295
234.2	0	47.403	47.285
234.3	0	47.34	47.275
234.4	0	47.277	47.265
234.5	0	47.256	47.255
234.6	0	47.235	47.245
234.7	0	47.214	47.235
234.8	0	47.214	47.225
234.9	0	47.214	47.215
235	0	47.214	47.205
235.1	0	47.214	47.2
235.2	0	47.214	47.2
235.3	0	47.214	47.2
235.4	0	47.235	47.2
235.5	0	47.235	47.2
235.6	0	47.235	47.2
235.7	0	47.235	47.2
235.8	0	47.235	47.2
235.9	0	47.235	47.2
236	0	47.256	47.2
236.1	0	47.256	47.2
236.2	0	47.256	47.2
236.3	0	47.256	47.2
236.4	0	47.256	47.2
236.5	0	47.256	47.2
236.6	0	47.256	47.2
236.7	0	47.256	47.2
236.8	0	47.256	47.2
236.9	0	47.256	47.2
237	0	47.256	47.2
237.1	0	47.256	47.195
237.2	0	47.235	47.185
237.3	0	47.235	47.175
237.4	0	47.235	47.165
237.5	0	47.235	47.155
237.6	0	47.235	47.145
237.7	0	47.235	47.135
237.8	0	47.235	47.125
237.9	0	47.235	47.115
238	0	47.235	47.105
238.1	0	47.235	47.095
238.2	0	47.235	47.085
238.3	0	47.235	47.075

238.4	0	47.235	47.065
238.5	0	47.235	47.055
238.6	0	47.235	47.045
238.7	0	47.235	47.035
238.8	0	47.256	47.025
238.9	0	47.256	47.015
239	0	47.256	47.005
239.1	0	47.256	47
239.2	0	47.256	47
239.3	0	47.256	47
239.4	0	47.256	47
239.5	0	47.256	47
239.6	0	47.235	47
239.7	0	47.235	47
239.8	0	47.235	47
239.9	0	47.235	47
240	0	47.235	47
240.1	0	47.235	46.995
240.2	0	47.235	46.985
240.3	0	47.214	46.975
240.4	0	47.214	46.965
240.5	0	47.193	46.955
240.6	0	47.193	46.945
240.7	0	47.193	46.935
240.8	0	47.172	46.925
240.9	0	47.172	46.915
241	0	47.172	46.905
241.1	0	47.172	46.895
241.2	0	47.172	46.885
241.3	0	47.151	46.875
241.4	0	47.151	46.865
241.5	0	47.151	46.855
241.6	0	47.151	46.845
241.7	0	47.151	46.835
241.8	0	47.151	46.825
241.9	0	47.151	46.815
242	0	47.151	46.805
242.1	0	47.151	46.805
242.2	0	47.151	46.815
242.3	0	47.13	46.825
242.4	0	47.13	46.835
242.5	0	47.109	46.845
242.6	0	47.13	46.855
242.7	0	47.109	46.865
242.8	0	47.088	46.875

242.9	0	47.088	46.885
243	0	47.088	46.895
243.1	0	47.088	46.905
243.2	0	47.109	46.915
243.3	0	47.109	46.925
243.4	0	47.151	46.935
243.5	0	47.172	46.945
243.6	0	47.193	46.955
243.7	0	47.214	46.965
243.8	0	47.235	46.975
243.9	0	47.256	46.985
244	0	47.277	46.995
244.1	0	47.298	47.01
244.2	0	47.319	47.03
244.3	0	47.34	47.05
244.4	0	47.361	47.07
244.5	0	47.382	47.09
244.6	0	47.403	47.11
244.7	0	47.445	47.13
244.8	0	47.465	47.15
244.9	0	47.486	47.17
245	0	47.528	47.19
245.1	0	47.549	47.215
245.2	0	47.57	47.245
245.3	0	47.591	47.275
245.4	0	47.633	47.305
245.5	0	47.654	47.335
245.6	0	47.675	47.365
245.7	0	47.717	47.395
245.8	0	47.738	47.425
245.9	0	47.759	47.455
246	0	47.801	47.485
246.1	0	47.822	47.52
246.2	0	47.842	47.56
246.3	0	47.884	47.6
246.4	0	47.905	47.64
246.5	0	47.926	47.68
246.6	0	47.947	47.72
246.7	0	47.968	47.76
246.8	0	48.01	47.8
246.9	0	48.01	47.84
247	0	48.052	47.88
247.1	0	48.073	47.905
247.2	0	48.094	47.915
247.3	0	48.094	47.925

247.4	0	48.115	47.935
247.5	0	48.136	47.945
247.6	0	48.157	47.955
247.7	0	48.157	47.965
247.8	0	48.157	47.975
247.9	0	48.178	47.985
248	0	48.178	47.995
248.1	0	48.178	48
248.2	0	48.178	48
248.3	0	48.199	48
248.4	0	48.199	48
248.5	0	48.22	48
248.6	0	48.22	48
248.7	0	48.22	48
248.8	0	48.24	48
248.9	0	48.261	48
249	0	48.261	48
249.1	0	48.261	48
249.2	0	48.282	48
249.3	0	48.303	48
249.4	0	48.324	48
249.5	0	48.324	48
249.6	0	48.324	48
249.7	0	48.345	48
249.8	0	48.345	48
249.9	0	48.366	48
250	0	48.366	48
250.1	0	48.366	48
250.2	0	48.387	48
250.3	0	48.387	48
250.4	0	48.408	48
250.5	0	48.408	48
250.6	0	48.408	48
250.7	0	48.429	48
250.8	0	48.408	48
250.9	0	48.408	48
251	0	48.408	48
251.1	0	48.408	48
251.2	0	48.408	48
251.3	0	48.408	48
251.4	0	48.429	48
251.5	0	48.429	48
251.6	0	48.429	48
251.7	0	48.45	48
251.8	0	48.45	48

251.9	0	48.471	48
252	0	48.471	48
252.1	0	48.492	48.005
252.2	0	48.492	48.015
252.3	0	48.492	48.025
252.4	0	48.492	48.035
252.5	0	48.492	48.045
252.6	0	48.492	48.055
252.7	0	48.492	48.065
252.8	0	48.492	48.075
252.9	0	48.492	48.085
253	0	48.492	48.095
253.1	0	48.492	48.105
253.2	0	48.471	48.115
253.3	0	48.471	48.125
253.4	0	48.45	48.135
253.5	0	48.45	48.145
253.6	0	48.429	48.155
253.7	0	48.408	48.165
253.8	0	48.387	48.175
253.9	0	48.387	48.185
254	0	48.366	48.195
254.1	0	48.345	48.2
254.2	0	48.345	48.2
254.3	0	48.324	48.2
254.4	0	48.324	48.2
254.5	0	48.303	48.2
254.6	0	48.282	48.2
254.7	0	48.282	48.2
254.8	0	48.261	48.2
254.9	0	48.261	48.2
255	0	48.24	48.2
255.1	0	48.24	48.195
255.2	0	48.22	48.185
255.3	0	48.22	48.175
255.4	0	48.199	48.165
255.5	0	48.199	48.155
255.6	0	48.22	48.145
255.7	0	48.22	48.135
255.8	0	48.22	48.125
255.9	0	48.24	48.115
256	0	48.24	48.105
256.1	0	48.261	48.125
256.2	0	48.282	48.175
256.3	0	48.303	48.225

256.4	0	48.324	48.275
256.5	0	48.345	48.325
256.6	0	48.387	48.375
256.7	0	48.387	48.425
256.8	0	48.429	48.475
256.9	0	48.471	48.525
257	0	48.492	48.575
257.1	0	48.534	48.615
257.2	0	48.534	48.645
257.3	0	48.597	48.675
257.4	0	48.638	48.705
257.5	0	48.659	48.735
257.6	0	48.659	48.765
257.7	0	48.701	48.795
257.8	0	48.764	48.825
257.9	0	48.785	48.855
258	0	48.806	48.885
258.1	0	48.806	48.91
258.2	0	48.827	48.93
258.3	0	48.848	48.95
258.4	0	48.869	48.97
258.5	0	48.869	48.99
258.6	0	48.89	49.01
258.7	0	48.911	49.03
258.8	0	48.953	49.05
258.9	0	48.974	49.07
259	0	48.974	49.09
259.1	0	48.995	49.1
259.2	0	48.995	49.1
259.3	0	49.016	49.1
259.4	0	49.016	49.1
259.5	0	49.036	49.1
259.6	0	49.036	49.1
259.7	0	49.036	49.1
259.8	0	49.057	49.1
259.9	0	49.057	49.1
260	0	49.078	49.1
260.1	0	49.078	49.1
260.2	0	49.078	49.1
260.3	0	49.099	49.1
260.4	0	49.099	49.1
260.5	0	49.12	49.1
260.6	0	49.12	49.1
260.7	0	49.12	49.1
260.8	0	49.141	49.1

260.9	0	49.141	49.1
261	0	49.162	49.1
261.1	0	49.162	49.1
261.2	0	49.183	49.1
261.3	0	49.183	49.1
261.4	0	49.183	49.1
261.5	0	49.183	49.1
261.6	0	49.204	49.1
261.7	0	49.204	49.1
261.8	0	49.204	49.1
261.9	0	49.225	49.1
262	0	49.225	49.1
262.1	0	49.246	49.1
262.2	0	49.246	49.1
262.3	0	49.246	49.1
262.4	0	49.246	49.1
262.5	0	49.246	49.1
262.6	0	49.246	49.1
262.7	0	49.246	49.1
262.8	0	49.246	49.1
262.9	0	49.246	49.1
263	0	49.246	49.1
263.1	0	49.225	49.095
263.2	0	49.225	49.085
263.3	0	49.204	49.075
263.4	0	49.183	49.065
263.5	0	49.183	49.055
263.6	0	49.162	49.045
263.7	0	49.141	49.035
263.8	0	49.141	49.025
263.9	0	49.12	49.015
264	0	49.099	49.005
264.1	0	49.099	48.995
264.2	0	49.057	48.985
264.3	0	49.036	48.975
264.4	0	48.995	48.965
264.5	0	48.932	48.955
264.6	0	48.89	48.945
264.7	0	48.827	48.935
264.8	0	48.764	48.925
264.9	0	48.701	48.915
265	0	48.638	48.905
265.1	0	48.576	48.865
265.2	0	48.513	48.795
265.3	0	48.45	48.725



265.4	0	48.408	48.655
265.5	0	48.408	48.585
265.6	0	48.282	48.515
265.7	0	48.24	48.445
265.8	0	48.178	48.375
265.9	0	48.136	48.305
266	0	48.136	48.235
266.1	0	48.031	48.175
266.2	0	47.968	48.125
266.3	0	47.926	48.075
266.4	0	47.926	48.025
266.5	0	47.822	47.975
266.6	0	47.759	47.925
266.7	0	47.717	47.875
266.8	0	47.717	47.825
266.9	0	47.654	47.775
267	0	47.591	47.725
267.1	0	47.591	47.69
267.2	0	47.57	47.67
267.3	0	47.57	47.65
267.4	0	47.549	47.63
267.5	0	47.549	47.61
267.6	0	47.528	47.59
267.7	0	47.528	47.57
267.8	0	47.528	47.55
267.9	0	47.507	47.53
268	0	47.507	47.51
268.1	0	47.507	47.485
268.2	0	47.507	47.455
268.3	0	47.486	47.425
268.4	0	47.465	47.395
268.5	0	47.465	47.365
268.6	0	47.465	47.335
268.7	0	47.445	47.305
268.8	0	47.424	47.275
268.9	0	47.382	47.245
269	0	47.382	47.215
269.1	0	47.34	47.175
269.2	0	47.298	47.125
269.3	0	47.256	47.075
269.4	0	47.214	47.025
269.5	0	47.172	46.975
269.6	0	47.13	46.925
269.7	0	47.067	46.875
269.8	0	47.026	46.825

269.9	0	46.984	46.775
270	0	46.942	46.725
270.1	0	46.879	46.675
270.2	0	46.837	46.625
270.3	0	46.795	46.575
270.4	0	46.753	46.525
270.5	0	46.69	46.475
270.6	0	46.649	46.425
270.7	0	46.607	46.375
270.8	0	46.565	46.325
270.9	0	46.502	46.275
271	0	46.46	46.225
271.1	0	46.418	46.19
271.2	0	46.376	46.17
271.3	0	46.334	46.15
271.4	0	46.271	46.13
271.5	0	46.23	46.11
271.6	0	46.188	46.09
271.7	0	46.146	46.07
271.8	0	46.125	46.05
271.9	0	46.083	46.03
272	0	46.062	46.01
272.1	0	46.041	45.99
272.2	0	46.02	45.97
272.3	0	45.999	45.95
272.4	0	45.978	45.93
272.5	0	45.957	45.91
272.6	0	45.936	45.89
272.7	0	45.894	45.87
272.8	0	45.873	45.85
272.9	0	45.853	45.83
273	0	45.832	45.81
273.1	0	45.811	45.79
273.2	0	45.79	45.77
273.3	0	45.79	45.75
273.4	0	45.769	45.73
273.5	0	45.748	45.71
273.6	0	45.706	45.69
273.7	0	45.706	45.67
273.8	0	45.685	45.65
273.9	0	45.664	45.63
274	0	45.643	45.61
274.1	0	45.622	45.59
274.2	0	45.622	45.57
274.3	0	45.601	45.55

274.4	0	45.58	45.53
274.5	0	45.559	45.51
274.6	0	45.559	45.49
274.7	0	45.559	45.47
274.8	0	45.517	45.45
274.9	0	45.496	45.43
275	0	45.476	45.41
275.1	0	45.455	45.39
275.2	0	45.455	45.37
275.3	0	45.413	45.35
275.4	0	45.413	45.33
275.5	0	45.392	45.31
275.6	0	45.392	45.29
275.7	0	45.371	45.27
275.8	0	45.35	45.25
275.9	0	45.329	45.23
276	0	45.308	45.21
276.1	0	45.308	45.19
276.2	0	45.266	45.17
276.3	0	45.245	45.15
276.4	0	45.224	45.13
276.5	0	45.224	45.11
276.6	0	45.203	45.09
276.7	0	45.182	45.07
276.8	0	45.161	45.05
276.9	0	45.161	45.03
277	0	45.14	45.01
277.1	0	45.119	44.985
277.2	0	45.078	44.955
277.3	0	45.057	44.923
277.4	0	45.057	44.895
277.5	0	45.036	44.865
277.6	0	44.973	44.835
277.7	0	44.952	44.805
277.8	0	44.952	44.775
277.9	0	44.931	44.745
278	0	44.889	44.715
278.1	0	44.847	44.69
278.2	0	44.847	44.67
278.3	0	44.826	44.65
278.4	0	44.805	44.63
278.5	0	44.784	44.61
278.6	0	44.784	44.59
278.7	0	44.784	44.57
278.8	0	44.763	44.55

278.9	0	44.742	44.53
279	0	44.68	44.51
279.1	0	44.68	44.485
279.2	0	44.659	44.455
279.3	0	44.617	44.425
279.4	0	44.575	44.395
279.5	0	44.554	44.365
279.6	0	44.512	44.335
279.7	0	44.491	44.305
279.8	0	44.449	44.275
279.9	0	44.428	44.245
280	0	44.407	44.215
280.1	0	44.386	44.165
280.2	0	44.344	44.095
280.3	0	44.323	44.025
280.4	0	44.261	43.955
280.5	0	44.219	43.885
280.6	0	44.156	43.815
280.7	0	44.093	43.745
280.8	0	44.03	43.675
280.9	0	43.967	43.605
281	0	43.904	43.535
281.1	0	43.842	43.465
281.2	0	43.779	43.395
281.3	0	43.695	43.325
281.4	0	43.632	43.255
281.5	0	43.569	43.185
281.6	0	43.507	43.115
281.7	0	43.444	43.045
281.8	0	43.36	42.975
281.9	0	43.297	42.905
282	0	43.234	42.835
282.1	0	43.171	42.76
282.2	0	43.088	42.68
282.3	0	43.025	42.6
282.4	0	42.941	42.52
282.5	0	42.878	42.44
282.6	0	42.794	42.36
282.7	0	42.731	42.28
282.8	0	42.648	42.2
282.9	0	42.585	42.12
283	0	42.501	42.04
283.1	0	42.417	41.905
283.2	0	42.354	41.715
283.3	0	42.271	41.525

283.4	0	42.187	41.335
283.5	0	42.124	41.145
283.6	0	42.04	40.955
283.7	0	41.977	40.765
283.8	0	41.894	40.575
283.9	0	41.81	40.385
284	0	41.747	40.195
284.1	0	41.579	40.025
284.2	0	41.16	39.875
284.3	0	40.637	39.725
284.4	0	40.637	39.575
284.5	0	39.61	39.425
284.6	0	39.317	39.275
284.7	0	39.129	39.125
284.8	0	38.982	38.975
284.9	0	38.982	38.825
285	0	38.752	38.675
285.1	0	38.668	38.545
285.2	0	38.563	38.435
285.3	0	38.563	38.325
285.4	0	38.479	38.215
285.5	0	38.312	38.105
285.6	0	38.228	37.995
285.7	0	38.228	37.885
285.8	0	38.144	37.775
285.9	0	37.914	37.665
286	0	37.809	37.555
286.1	0	37.704	37.415
286.2	0	37.704	37.245
286.3	0	37.6	37.075
286.4	0	37.369	36.905
286.5	0	37.243	36.735
286.6	0	37.243	36.565
286.7	0	37.139	36.395
286.8	0	37.013	36.225
286.9	0	36.762	36.055
287	0	36.657	35.885
287.1	0	36.657	35.745
287.2	0	36.552	35.635
287.3	0	36.447	35.525
287.4	0	36.28	35.415
287.5	0	36.28	35.305
287.6	0	36.175	35.195
287.7	0	36.091	35.085
287.8	0	36.008	34.975

287.9	0	35.777	34.865
288	0	35.777	34.755
288.1	0	35.651	34.665
288.2	0	35.505	34.595
288.3	0	35.358	34.525
288.4	0	35.212	34.455
288.5	0	35.065	34.385
288.6	0	34.96	34.315
288.7	0	34.855	34.245
288.8	0	34.751	34.175
288.9	0	34.667	34.105
289	0	34.562	34.035
289.1	0	34.478	33.965
289.2	0	34.374	33.895
289.3	0	34.269	33.825
289.4	0	34.164	33.755
289.5	0	34.08	33.685
289.6	0	33.976	33.615
289.7	0	33.871	33.541
289.8	0	33.766	33.475
289.9	0	33.662	33.405
290	0	33.557	33.335
290.1	0	33.557	33.26
290.2	0	33.347	33.18
290.3	0	33.243	33.1
290.4	0	33.138	33.02
290.5	0	33.054	32.94
290.6	0	32.949	32.86
290.7	0	32.866	32.78
290.8	0	32.782	32.7
290.9	0	32.698	32.62
291	0	32.593	32.54
291.1	0	32.509	32.46
291.2	0	32.426	32.38
291.3	0	32.321	32.3
291.4	0	32.237	32.22
291.5	0	32.153	32.14
291.6	0	32.07	32.06
291.7	0	31.986	31.98
291.8	0	31.902	31.9
291.9	0	31.818	31.82
292	0	31.713	31.74
292.1	0	31.63	31.645
292.2	0	31.525	31.535
292.3	0	31.441	31.425

292.4	0	31.336	31.315
292.5	0	31.232	31.205
292.6	0	31.148	31.095
292.7	0	31.064	30.985
292.8	0	30.959	30.875
292.9	0	30.876	30.765
293	0	30.792	30.655
293.1	0	30.708	30.55
293.2	0	30.708	30.45
293.3	0	30.519	30.35
293.4	0	30.415	30.25
293.5	0	30.31	30.15
293.6	0	30.184	30.05
293.7	0	30.059	29.95
293.8	0	29.933	29.85
293.9	0	29.828	29.75
294	0	29.724	29.65
294.1	0	29.724	29.56
294.2	0	29.535	29.48
294.3	0	29.451	29.4
294.4	0	29.367	29.32
294.5	0	29.367	29.24
294.6	0	29.284	29.16
294.7	0	29.095	29.08
294.8	0	29.011	29
294.9	0	28.928	28.92
295	0	28.928	28.84
295.1	0	28.76	28.78
295.2	0	28.676	28.74
295.3	0	28.592	28.7
295.4	0	28.592	28.66
295.5	0	28.509	28.62
295.6	0	28.341	28.58
295.7	0	28.278	28.54
295.8	0	28.215	28.5
295.9	0	28.215	28.46
296	0	28.173	28.42
296.1	0	28.069	28.41
296.2	0	28.048	28.43
296.3	0	28.048	28.45
296.4	0	28.006	28.47
296.5	0	27.964	28.49
296.6	0	27.943	28.51
296.7	0	27.943	28.53
296.8	0	27.985	28.55

296.9	0	28.048	28.57
297	0	28.215	28.59
297.1	0	28.341	28.645
297.2	0	28.341	28.735
297.3	0	28.446	28.825
297.4	0	28.592	28.915
297.5	0	28.844	29.005
297.6	0	28.844	29.095
297.7	0	28.969	29.185
297.8	0	29.095	29.275
297.9	0	29.221	29.365
298	0	29.346	29.455
298.1	0	29.472	29.595
298.2	0	29.598	29.785
298.3	0	29.724	29.975
298.4	0	29.87	30.165
298.5	0	29.996	30.355
298.6	0	30.142	30.545
298.7	0	30.268	30.735
298.8	0	30.415	30.925
298.9	0	30.561	31.115
299	0	30.729	31.305
299.1	0	30.917	31.5
299.2	0	31.127	31.7
299.3	0	31.336	31.9
299.4	0	31.546	32.1
299.5	0	31.755	32.3
299.6	0	31.986	32.5
299.7	0	32.195	32.7
299.8	0	32.426	32.9
299.9	0	32.677	33.1
300	0	32.907	33.3
300.1	0	33.138	33.51
300.2	0	33.389	33.73
300.3	0	33.62	33.95
300.4	0	33.871	34.17
300.5	0	34.101	34.39
300.6	0	34.353	34.61
300.7	0	34.562	34.83
300.8	0	34.751	35.05
300.9	0	34.939	35.27
301	0	35.107	35.49
301.1	0	35.274	35.695
301.2	0	35.442	35.885
301.3	0	35.631	36.075



301.4	0	35.798	36.265
301.5	0	35.966	36.455
301.6	0	36.133	36.645
301.7	0	36.301	36.835
301.8	0	36.468	37.025
301.9	0	36.636	37.215
302	0	36.824	37.405
302.1	0	36.971	37.58
302.2	0	37.139	37.74
302.3	0	37.264	37.9
302.4	0	37.411	38.06
302.5	0	37.558	38.22
302.6	0	37.704	38.38
302.7	0	37.83	38.54
302.8	0	37.83	38.7
302.9	0	38.102	38.86
303	0	38.228	39.02
303.1	0	38.228	39.155
303.2	0	38.479	39.265
303.3	0	38.584	39.375
303.4	0	38.689	39.485
303.5	0	38.814	39.595
303.6	0	38.919	39.705
303.7	0	38.919	39.815
303.8	0	39.15	39.925
303.9	0	39.275	40.035
304	0	39.38	40.145
304.1	0	39.506	40.245
304.2	0	39.506	40.335
304.3	0	39.757	40.425
304.4	0	39.862	40.515
304.5	0	39.987	40.605
304.6	0	39.987	40.695
304.7	0	40.113	40.785
304.8	0	40.344	40.875
304.9	0	40.469	40.965
305	0	40.469	41.055
305.1	0	40.574	41.135
305.2	0	40.825	41.205
305.3	0	40.951	41.275
305.4	0	41.056	41.345
305.5	0	41.056	41.415
305.6	0	41.181	41.485
305.7	0	41.412	41.555
305.8	0	41.538	41.625

305.9	0	41.538	41.695
306	0	41.663	41.765
306.1	0	41.768	41.83
306.2	0	41.977	41.89
306.3	0	41.977	41.95
306.4	0	42.103	42.01
306.5	0	42.208	42.07
306.6	0	42.313	42.13
306.7	0	42.501	42.19
306.8	0	42.501	42.25
306.9	0	42.606	42.31
307	0	42.69	42.37
307.1	0	42.773	42.42
307.2	0	42.857	42.46
307.3	0	42.941	42.5
307.4	0	43.004	42.54
307.5	0	43.088	42.58
307.6	0	43.234	42.62
307.7	0	43.234	42.66
307.8	0	43.318	42.7
307.9	0	43.381	42.74
308	0	43.465	42.78
308.1	0	43.527	42.825
308.2	0	43.611	42.875
308.3	0	43.674	42.925
308.4	0	43.758	42.975
308.5	0	43.821	43.025
308.6	0	43.884	43.075
308.7	0	43.946	43.125
308.8	0	44.009	43.175
308.9	0	44.072	43.225
309	0	44.114	43.275
309.1	0	44.135	43.325
309.2	0	44.156	43.375
309.3	0	44.156	43.425
309.4	0	44.156	43.475
309.5	0	44.156	43.525
309.6	0	44.156	43.575
309.7	0	44.156	43.625
309.8	0	44.156	43.675
309.9	0	44.156	43.725
310	0	44.135	43.775
310.1	0	44.135	43.825
310.2	0	44.114	43.875
310.3	0	44.114	43.925

310.4	0	44.093	43.975
310.5	0	44.114	44.025
310.6	0	44.114	44.075
310.7	0	44.135	44.125
310.8	0	44.156	44.175
310.9	0	44.177	44.225
311	0	44.198	44.275
311.1	0	44.219	44.32
311.2	0	44.24	44.36
311.3	0	44.261	44.4
311.4	0	44.261	44.44
311.5	0	44.282	44.48
311.6	0	44.302	44.52
311.7	0	44.323	44.56
311.8	0	44.344	44.6
311.9	0	44.365	44.64
312	0	44.386	44.68
312.1	0	44.407	44.715
312.2	0	44.449	44.745
312.3	0	44.47	44.775
312.4	0	44.491	44.805
312.5	0	44.512	44.835
312.6	0	44.554	44.865
312.7	0	44.575	44.897
312.8	0	44.596	44.925
312.9	0	44.596	44.955
313	0	44.638	44.985
313.1	0	44.68	45.01
313.2	0	44.7	45.03
313.3	0	44.721	45.05
313.4	0	44.721	45.07
313.5	0	44.784	45.09
313.6	0	44.805	45.11
313.7	0	44.847	45.13
313.8	0	44.847	45.15
313.9	0	44.91	45.17
314	0	44.931	45.19
314.1	0	44.973	45.21
314.2	0	44.973	45.23
314.3	0	45.015	45.25
314.4	0	45.078	45.27
314.5	0	45.119	45.29
314.6	0	45.161	45.31
314.7	0	45.161	45.33
314.8	0	45.203	45.35

314.9	0	45.266	45.37
315	0	45.308	45.39
315.1	0	45.308	45.405
315.2	0	45.35	45.415
315.3	0	45.371	45.425
315.4	0	45.434	45.435
315.5	0	45.455	45.445
315.6	0	45.455	45.455
315.7	0	45.496	45.465
315.8	0	45.517	45.475
315.9	0	45.559	45.485
316	0	45.559	45.495
316.1	0	45.559	45.515
316.2	0	45.622	45.545
316.3	0	45.664	45.575
316.4	0	45.664	45.605
316.5	0	45.685	45.635
316.6	0	45.706	45.665
316.7	0	45.727	45.695
316.8	0	45.727	45.725
316.9	0	45.748	45.755
317	0	45.748	45.785
317.1	0	45.769	45.81
317.2	0	45.79	45.83
317.3	0	45.79	45.85
317.4	0	45.811	45.87
317.5	0	45.811	45.89
317.6	0	45.811	45.91
317.7	0	45.832	45.93
317.8	0	45.832	45.95
317.9	0	45.853	45.97
318	0	45.853	45.99
318.1	0	45.873	46.005
318.2	0	45.873	46.015
318.3	0	45.894	46.025
318.4	0	45.894	46.035
318.5	0	45.915	46.045
318.6	0	45.936	46.055
318.7	0	45.936	46.065
318.8	0	45.957	46.075
318.9	0	45.978	46.085
319	0	45.999	46.095
319.1	0	46.02	46.12
319.2	0	46.041	46.16
319.3	0	46.062	46.2

319.4	0	46.083	46.24
319.5	0	46.104	46.28
319.6	0	46.125	46.32
319.7	0	46.146	46.36
319.8	0	46.188	46.4
319.9	0	46.209	46.44
320	0	46.23	46.48
320.1	0	46.251	46.515
320.2	0	46.292	46.545
320.3	0	46.334	46.575
320.4	0	46.355	46.605
320.5	0	46.397	46.635
320.6	0	46.439	46.665
320.7	0	46.481	46.695
320.8	0	46.523	46.725
320.9	0	46.565	46.755
321	0	46.607	46.785
321.1	0	46.649	46.815
321.2	0	46.69	46.845
321.3	0	46.732	46.875
321.4	0	46.774	46.905
321.5	0	46.816	46.935
321.6	0	46.858	46.965
321.7	0	46.858	46.995
321.8	0	46.963	47.025
321.9	0	47.005	47.055
322	0	47.047	47.085
322.1	0	47.088	47.13
322.2	0	47.13	47.19
322.3	0	47.193	47.25
322.4	0	47.235	47.31
322.5	0	47.298	47.37
322.6	0	47.298	47.43
322.7	0	47.403	47.49
322.8	0	47.445	47.55
322.9	0	47.507	47.61
323	0	47.507	47.67
323.1	0	47.57	47.73
323.2	0	47.654	47.79
323.3	0	47.717	47.85
323.4	0	47.78	47.91
323.5	0	47.78	47.97
323.6	0	47.822	48.03
323.7	0	47.947	48.09
323.8	0	48.01	48.15

323.9	0	48.01	48.21
324	0	48.073	48.27
324.1	0	48.199	48.335
324.2	0	48.261	48.405
324.3	0	48.261	48.475
324.4	0	48.345	48.545
324.5	0	48.408	48.615
324.6	0	48.555	48.685
324.7	0	48.638	48.755
324.8	0	48.638	48.825
324.9	0	48.722	48.895
325	0	48.806	48.965
325.1	0	48.995	49.035
325.2	0	48.995	49.105
325.3	0	49.078	49.175
325.4	0	49.162	49.245
325.5	0	49.246	49.315
325.6	0	49.434	49.385
325.7	0	49.434	49.455
325.8	0	49.518	49.525
325.9	0	49.602	49.595
326	0	49.77	49.665
326.1	0	49.77	49.73
326.2	0	49.853	49.79
326.3	0	49.937	49.85
326.4	0	50	49.91
326.5	0	50.084	49.97
326.6	0	50.147	50.03
326.7	0	50.23	50.09
326.8	0	50.293	50.15
326.9	0	50.356	50.21
327	0	50.419	50.27
327.1	0	50.482	50.335
327.2	0	50.524	50.405
327.3	0	50.587	50.475
327.4	0	50.649	50.545
327.5	0	50.712	50.615
327.6	0	50.775	50.685
327.7	0	50.817	50.755
327.8	0	50.88	50.825
327.9	0	50.943	50.895
328	0	51.005	50.965
328.1	0	51.068	51.035
328.2	0	51.131	51.105
328.3	0	51.194	51.175

328.4	0	51.236	51.245
328.5	0	51.299	51.315
328.6	0	51.362	51.385
328.7	0	51.424	51.455
328.8	0	51.487	51.525
328.9	0	51.55	51.595
329	0	51.613	51.665
329.1	0	51.613	51.735
329.2	0	51.739	51.805
329.3	0	51.801	51.875
329.4	0	51.864	51.945
329.5	0	51.906	52.015
329.6	0	51.969	52.085
329.7	0	52.032	52.155
329.8	0	52.095	52.225
329.9	0	52.137	52.295
330	0	52.199	52.365
330.1	0	52.262	52.435
330.2	0	52.325	52.505
330.3	0	52.388	52.575
330.4	0	52.472	52.645
330.5	0	52.535	52.715
330.6	0	52.597	52.785
330.7	0	52.681	52.855
330.8	0	52.744	52.925
330.9	0	52.807	52.995
331	0	52.87	53.065
331.1	0	52.954	53.135
331.2	0	53.016	53.205
331.3	0	53.079	53.275
331.4	0	53.142	53.345
331.5	0	53.205	53.415
331.6	0	53.268	53.485
331.7	0	53.331	53.555
331.8	0	53.331	53.625
331.9	0	53.456	53.695
332	0	53.498	53.765
332.1	0	53.561	53.835
332.2	0	53.624	53.905
332.3	0	53.624	53.975
332.4	0	53.749	54.045
332.5	0	53.812	54.115
332.6	0	53.854	54.185
332.7	0	53.854	54.255
332.8	0	53.917	54.325

332.9	0	54.043	54.395
333	0	54.106	54.465
333.1	0	54.168	54.535
333.2	0	54.168	54.605
333.3	0	54.231	54.675
333.4	0	54.357	54.745
333.5	0	54.399	54.815
333.6	0	54.399	54.885
333.7	0	54.462	54.955
333.8	0	54.587	55.025
333.9	0	54.65	55.095
334	0	54.65	55.165
334.1	0	54.713	55.23
334.2	0	54.776	55.29
334.3	0	54.902	55.35
334.4	0	54.964	55.41
334.5	0	54.964	55.47
334.6	0	55.027	55.53
334.7	0	55.111	55.59
334.8	0	55.237	55.65
334.9	0	55.237	55.71
335	0	55.3	55.77
335.1	0	55.383	55.83
335.2	0	55.446	55.89
335.3	0	55.572	55.95
335.4	0	55.572	56.01
335.5	0	55.656	56.07
335.6	0	55.718	56.13
335.7	0	55.781	56.19
335.8	0	55.844	56.25
335.9	0	55.907	56.31
336	0	55.97	56.37
336.1	0	56.033	56.425
336.2	0	56.075	56.475
336.3	0	56.137	56.525
336.4	0	56.2	56.575
336.5	0	56.263	56.625
336.6	0	56.305	56.675
336.7	0	56.368	56.725
336.8	0	56.41	56.775
336.9	0	56.473	56.825
337	0	56.514	56.875
337.1	0	56.577	56.905
337.2	0	56.619	56.915
337.3	0	56.661	56.925



337.4	0	56.703	56.935
337.5	0	56.745	56.945
337.6	0	56.787	56.955
337.7	0	56.829	56.965
337.8	0	56.871	56.975
337.9	0	56.892	56.985
338	0	56.933	56.995
338.1	0	56.954	57.005
338.2	0	56.996	57.015
338.3	0	57.017	57.025
338.4	0	57.059	57.035
338.5	0	57.101	57.045
338.6	0	57.122	57.055
338.7	0	57.164	57.065
338.8	0	57.206	57.075
338.9	0	57.227	57.085
339	0	57.269	57.095
339.1	0	57.31	57.11
339.2	0	57.331	57.13
339.3	0	57.373	57.15
339.4	0	57.394	57.17
339.5	0	57.436	57.19
339.6	0	57.478	57.21
339.7	0	57.499	57.23
339.8	0	57.541	57.25
339.9	0	57.562	57.27
340	0	57.604	57.29
340.1	0	57.646	57.315
340.2	0	57.667	57.345
340.3	0	57.708	57.375
340.4	0	57.75	57.405
340.5	0	57.771	57.435
340.6	0	57.813	57.465
340.7	0	57.855	57.495
340.8	0	57.876	57.525
340.9	0	57.918	57.555
341	0	57.918	57.585
341.1	0	57.981	57.61
341.2	0	58.023	57.63
341.3	0	58.044	57.65
341.4	0	58.085	57.67
341.5	0	58.085	57.69
341.6	0	58.148	57.71
341.7	0	58.169	57.73
341.8	0	58.211	57.75

341.9	0	58.211	57.77
342	0	58.232	57.79
342.1	0	58.295	57.81
342.2	0	58.337	57.83
342.3	0	58.358	57.85
342.4	0	58.358	57.87
342.5	0	58.4	57.89
342.6	0	58.463	57.91
342.7	0	58.483	57.93
342.8	0	58.525	57.95
342.9	0	58.525	57.97
343	0	58.567	57.99
343.1	0	58.63	58.005
343.2	0	58.651	58.015
343.3	0	58.651	58.025
343.4	0	58.693	58.035
343.5	0	58.714	58.045
343.6	0	58.777	58.055
343.7	0	58.777	58.065
343.8	0	58.798	58.075
343.9	0	58.819	58.085
344	0	58.84	58.095
344.1	0	58.84	58.115
344.2	0	58.84	58.145
344.3	0	58.861	58.175
344.4	0	58.861	58.205
344.5	0	58.881	58.235
344.6	0	58.881	58.265
344.7	0	58.881	58.295
344.8	0	58.861	58.325
344.9	0	58.861	58.355
345	0	58.84	58.385
345.1	0	58.84	58.415
345.2	0	58.819	58.445
345.3	0	58.777	58.475
345.4	0	58.735	58.505
345.5	0	58.693	58.535
345.6	0	58.651	58.565
345.7	0	58.609	58.595
345.8	0	58.567	58.625
345.9	0	58.525	58.655
346	0	58.483	58.685
346.1	0	58.421	58.705
346.2	0	58.4	58.715
346.3	0	58.358	58.725

346.4	0	58.316	58.735
346.5	0	58.295	58.745
346.6	0	58.274	58.755
346.7	0	58.232	58.765
346.8	0	58.211	58.775
346.9	0	58.232	58.785
347	0	58.232	58.795
347.1	0	58.253	58.805
347.2	0	58.253	58.815
347.3	0	58.274	58.825
347.4	0	58.316	58.835
347.5	0	58.337	58.845
347.6	0	58.358	58.855
347.7	0	58.4	58.865
347.8	0	58.442	58.875
347.9	0	58.483	58.885
348	0	58.525	58.895
348.1	0	58.567	58.905
348.2	0	58.609	58.915
348.3	0	58.651	58.925
348.4	0	58.693	58.935
348.5	0	58.735	58.945
348.6	0	58.756	58.955
348.7	0	58.798	58.965
348.8	0	58.819	58.975
348.9	0	58.861	58.985
349	0	58.881	58.995
349.1	0	58.902	59
349.2	0	58.923	59
349.3	0	58.944	59
349.4	0	58.965	59
349.5	0	58.986	59
349.6	0	58.986	59
349.7	0	59.007	59
349.8	0	59.007	59
349.9	0	59.007	59
350	0	59.028	59
350.1	0	59.028	58.995
350.2	0	59.049	58.985
350.3	0	59.049	58.975
350.4	0	59.049	58.965
350.5	0	59.07	58.955
350.6	0	59.07	58.945
350.7	0	59.07	58.935
350.8	0	59.07	58.925

350.9	0	59.07	58.915
351	0	59.07	58.905
351.1	0	59.07	58.895
351.2	0	59.07	58.885
351.3	0	59.049	58.875
351.4	0	59.049	58.865
351.5	0	59.049	58.855
351.6	0	59.049	58.845
351.7	0	59.028	58.835
351.8	0	59.007	58.825
351.9	0	58.986	58.815
352	0	58.965	58.805
352.1	0	58.965	58.79
352.2	0	58.965	58.77
352.3	0	58.923	58.75
352.4	0	58.902	58.73
352.5	0	58.902	58.71
352.6	0	58.881	58.69
352.7	0	58.861	58.67
352.8	0	58.819	58.65
352.9	0	58.798	58.63
353	0	58.798	58.61
353.1	0	58.777	58.59
353.2	0	58.714	58.57
353.3	0	58.693	58.55
353.4	0	58.693	58.53
353.5	0	58.672	58.51
353.6	0	58.651	58.49
353.7	0	58.588	58.47
353.8	0	58.588	58.45
353.9	0	58.567	58.43
354	0	58.546	58.41
354.1	0	58.525	58.39
354.2	0	58.483	58.37
354.3	0	58.483	58.35
354.4	0	58.463	58.33
354.5	0	58.442	58.31
354.6	0	58.421	58.29
354.7	0	58.4	58.27
354.8	0	58.379	58.25
354.9	0	58.358	58.23
355	0	58.337	58.21
355.1	0	58.337	58.195
355.2	0	58.295	58.185
355.3	0	58.274	58.175

355.4	0	58.253	58.165
355.5	0	58.232	58.155
355.6	0	58.211	58.145
355.7	0	58.19	58.135
355.8	0	58.169	58.125
355.9	0	58.148	58.115
356	0	58.127	58.105
356.1	0	58.106	58.095
356.2	0	58.085	58.085
356.3	0	58.065	58.075
356.4	0	58.044	58.065
356.5	0	58.002	58.055
356.6	0	57.981	58.045
356.7	0	57.96	58.035
356.8	0	57.939	58.025
356.9	0	57.918	58.015
357	0	57.918	58.005
357.1	0	57.897	57.995
357.2	0	57.855	57.985
357.3	0	57.855	57.975
357.4	0	57.834	57.965
357.5	0	57.813	57.955
357.6	0	57.792	57.945
357.7	0	57.792	57.935
357.8	0	57.771	57.925
357.9	0	57.771	57.915
358	0	57.75	57.905
358.1	0	57.75	57.885
358.2	0	57.729	57.855
358.3	0	57.729	57.825
358.4	0	57.708	57.795
358.5	0	57.708	57.765
358.6	0	57.687	57.735
358.7	0	57.687	57.705
358.8	0	57.667	57.675
358.9	0	57.646	57.645
359	0	57.646	57.615
359.1	0	57.625	57.59
359.2	0	57.625	57.57
359.3	0	57.604	57.55
359.4	0	57.583	57.53
359.5	0	57.583	57.51
359.6	0	57.562	57.49
359.7	0	57.541	57.47
359.8	0	57.52	57.45

359.9	0	57.52	57.43
360	0	57.52	57.41
360.1	0	57.478	57.39
360.2	0	57.457	57.37
360.3	0	57.436	57.35
360.4	0	57.436	57.33
360.5	0	57.415	57.31
360.6	0	57.394	57.29
360.7	0	57.373	57.27
360.8	0	57.373	57.25
360.9	0	57.352	57.23
361	0	57.331	57.21
361.1	0	57.31	57.195
361.2	0	57.31	57.185
361.3	0	57.31	57.175
361.4	0	57.29	57.165
361.5	0	57.269	57.155
361.6	0	57.248	57.145
361.7	0	57.248	57.135
361.8	0	57.248	57.125
361.9	0	57.206	57.115
362	0	57.206	57.105
362.1	0	57.206	57.095
362.2	0	57.185	57.085
362.3	0	57.185	57.075
362.4	0	57.143	57.065
362.5	0	57.143	57.055
362.6	0	57.143	57.045
362.7	0	57.122	57.035
362.8	0	57.122	57.025
362.9	0	57.08	57.015
363	0	57.08	57.005
363.1	0	57.08	57
363.2	0	57.059	57
363.3	0	57.038	57
363.4	0	57.038	57
363.5	0	57.017	57
363.6	0	57.017	57
363.7	0	56.996	57
363.8	0	56.975	57
363.9	0	56.975	57
364	0	56.975	57
364.1	0	56.954	56.995
364.2	0	56.954	56.985
364.3	0	56.933	56.975

364.4	0	56.933	56.965
364.5	0	56.912	56.955
364.6	0	56.912	56.945
364.7	0	56.892	56.935
364.8	0	56.892	56.925
364.9	0	56.871	56.915
365	0	56.871	56.905
365.1	0	56.85	56.9
365.2	0	56.85	56.9
365.3	0	56.829	56.9
365.4	0	56.829	56.9
365.5	0	56.829	56.9
365.6	0	56.808	56.9
365.7	0	56.808	56.9
365.8	0	56.787	56.9
365.9	0	56.787	56.9
366	0	56.766	56.9
366.1	0	56.766	56.9
366.2	0	56.745	56.9
366.3	0	56.745	56.9
366.4	0	56.745	56.9
366.5	0	56.745	56.9
366.6	0	56.724	56.9
366.7	0	56.724	56.9
366.8	0	56.724	56.9
366.9	0	56.724	56.9
367	0	56.724	56.9
367.1	0	56.724	56.905
367.2	0	56.724	56.915
367.3	0	56.703	56.925
367.4	0	56.703	56.935
367.5	0	56.703	56.945
367.6	0	56.703	56.955
367.7	0	56.703	56.965
367.8	0	56.703	56.975
367.9	0	56.703	56.985
368	0	56.703	56.995
368.1	0	56.703	57
368.2	0	56.682	57
368.3	0	56.682	57
368.4	0	56.703	57
368.5	0	56.703	57
368.6	0	56.724	57
368.7	0	56.724	57
368.8	0	56.745	57

368.9	0	56.745	57
369	0	56.766	57
369.1	0	56.787	57
369.2	0	56.787	57
369.3	0	56.808	57
369.4	0	56.808	57
369.5	0	56.829	57
369.6	0	56.85	57
369.7	0	56.871	57
369.8	0	56.871	57
369.9	0	56.871	57
370	0	56.912	57
370.1	0	56.912	57
370.2	0	56.933	57
370.3	0	56.933	57
370.4	0	56.933	57
370.5	0	56.954	57
370.6	0	56.954	57
370.7	0	56.975	57
370.8	0	56.975	57
370.9	0	56.975	57
371	0	56.996	57
371.1	0	56.996	57
371.2	0	56.996	57
371.3	0	56.996	57
371.4	0	57.017	57
371.5	0	57.017	57
371.6	0	57.017	57
371.7	0	57.017	57
371.8	0	57.038	57
371.9	0	57.038	57
372	0	57.038	57
372.1	0	57.038	57
372.2	0	57.059	57
372.3	0	57.059	57
372.4	0	57.059	57
372.5	0	57.059	57
372.6	0	57.059	57
372.7	0	57.059	57
372.8	0	57.08	57
372.9	0	57.08	57
373	0	57.08	57
373.1	0	57.08	57
373.2	0	57.101	57
373.3	0	57.101	57



373.4	0	57.101	57
373.5	0	57.101	57
373.6	0	57.101	57
373.7	0	57.101	57
373.8	0	57.122	57
373.9	0	57.122	57
374	0	57.122	57
374.1	0	57.122	57
374.2	0	57.122	57
374.3	0	57.143	57
374.4	0	57.143	57
374.5	0	57.143	57
374.6	0	57.143	57
374.7	0	57.143	57
374.8	0	57.164	57
374.9	0	57.164	57
375	0	57.164	57
375.1	0	57.164	57
375.2	0	57.164	57
375.3	0	57.164	57
375.4	0	57.185	57
375.5	0	57.185	57
375.6	0	57.185	57
375.7	0	57.185	57
375.8	0	57.185	57
375.9	0	57.185	57
376	0	57.185	57
376.1	0	57.185	56.995
376.2	0	57.185	56.985
376.3	0	57.185	56.975
376.4	0	57.185	56.965
376.5	0	57.185	56.955
376.6	0	57.185	56.945
376.7	0	57.185	56.935
376.8	0	57.185	56.925
376.9	0	57.185	56.915
377	0	57.185	56.905
377.1	0	57.185	56.895
377.2	0	57.185	56.885
377.3	0	57.185	56.875
377.4	0	57.164	56.865
377.5	0	57.164	56.855
377.6	0	57.164	56.845
377.7	0	57.164	56.835
377.8	0	57.143	56.825

377.9	0	57.122	56.815
378	0	57.08	56.805
378.1	0	57.059	56.785
378.2	0	57.017	56.755
378.3	0	56.975	56.725
378.4	0	56.954	56.695
378.5	0	56.912	56.665
378.6	0	56.871	56.635
378.7	0	56.808	56.605
378.8	0	56.745	56.575
378.9	0	56.682	56.545
379	0	56.619	56.515
379.1	0	56.619	56.485
379.2	0	56.494	56.455
379.3	0	56.431	56.425
379.4	0	56.389	56.395
379.5	0	56.347	56.365
379.6	0	56.347	56.335
379.7	0	56.305	56.305
379.8	0	56.284	56.275
379.9	0	56.284	56.245
380	0	56.284	56.215
380.1	0	56.263	56.19
380.2	0	56.242	56.17
380.3	0	56.221	56.15
380.4	0	56.221	56.13
380.5	0	56.221	56.11
380.6	0	56.2	56.09
380.7	0	56.179	56.07
380.8	0	56.179	56.05
380.9	0	56.179	56.03
381	0	56.158	56.01
381.1	0	56.137	56
381.2	0	56.137	56
381.3	0	56.137	56
381.4	0	56.116	56
381.5	0	56.116	56
381.6	0	56.096	56
381.7	0	56.075	56
381.8	0	56.075	56
381.9	0	56.075	56
382	0	56.054	56
382.1	0	56.033	56
382.2	0	56.033	56
382.3	0	56.033	56

382.4	0	56.033	56
382.5	0	56.033	56
382.6	0	56.033	56
382.7	0	56.033	56
382.8	0	56.012	56
382.9	0	56.033	56
383	0	56.033	56
383.1	0	56.033	56.005
383.2	0	56.033	56.015
383.3	0	56.033	56.025
383.4	0	56.033	56.035
383.5	0	56.054	56.045
383.6	0	56.075	56.055
383.7	0	56.096	56.065
383.8	0	56.116	56.075
383.9	0	56.158	56.085
384	0	56.179	56.095
384.1	0	56.221	56.115
384.2	0	56.263	56.145
384.3	0	56.284	56.175
384.4	0	56.326	56.205
384.5	0	56.368	56.235
384.6	0	56.389	56.265
384.7	0	56.431	56.295
384.8	0	56.452	56.325
384.9	0	56.473	56.355
385	0	56.514	56.385
385.1	0	56.535	56.415
385.2	0	56.577	56.445
385.3	0	56.598	56.475
385.4	0	56.64	56.505
385.5	0	56.661	56.535
385.6	0	56.703	56.565
385.7	0	56.724	56.595
385.8	0	56.745	56.625
385.9	0	56.787	56.655
386	0	56.808	56.685
386.1	0	56.85	56.71
386.2	0	56.871	56.73
386.3	0	56.912	56.75
386.4	0	56.933	56.77
386.5	0	56.954	56.79
386.6	0	56.996	56.81
386.7	0	57.017	56.83
386.8	0	57.059	56.85

386.9	0	57.08	56.87
387	0	57.101	56.89
387.1	0	57.122	56.91
387.2	0	57.164	56.93
387.3	0	57.185	56.95
387.4	0	57.206	56.97
387.5	0	57.248	56.99
387.6	0	57.269	57.01
387.7	0	57.29	57.03
387.8	0	57.331	57.05
387.9	0	57.352	57.07
388	0	57.373	57.09
388.1	0	57.394	57.11
388.2	0	57.436	57.13
388.3	0	57.457	57.15
388.4	0	57.478	57.17
388.5	0	57.499	57.19
388.6	0	57.52	57.21
388.7	0	57.541	57.23
388.8	0	57.562	57.25
388.9	0	57.562	57.27
389	0	57.562	57.29
389.1	0	57.562	57.305
389.2	0	57.562	57.315
389.3	0	57.541	57.325
389.4	0	57.541	57.335
389.5	0	57.541	57.345
389.6	0	57.541	57.355
389.7	0	57.541	57.365
389.8	0	57.541	57.375
389.9	0	57.541	57.385
390	0	57.52	57.395
390.1	0	57.52	57.4
390.2	0	57.52	57.4
390.3	0	57.499	57.4
390.4	0	57.478	57.4
390.5	0	57.457	57.4
390.6	0	57.436	57.4
390.7	0	57.436	57.4
390.8	0	57.415	57.4
390.9	0	57.373	57.4
391	0	57.373	57.4
391.1	0	57.373	57.39
391.2	0	57.352	57.37
391.3	0	57.331	57.35

391.4	0	57.29	57.33
391.5	0	57.29	57.31
391.6	0	57.269	57.29
391.7	0	57.248	57.27
391.8	0	57.206	57.25
391.9	0	57.164	57.23
392	0	57.164	57.21
392.1	0	57.122	57.19
392.2	0	57.101	57.17
392.3	0	57.059	57.15
392.4	0	57.038	57.13
392.5	0	56.996	57.11
392.6	0	56.975	57.09
392.7	0	56.933	57.07
392.8	0	56.912	57.05
392.9	0	56.871	57.03
393	0	56.85	57.01
393.1	0	56.808	56.995
393.2	0	56.787	56.985
393.3	0	56.745	56.975
393.4	0	56.724	56.965
393.5	0	56.703	56.955
393.6	0	56.682	56.945
393.7	0	56.64	56.935
393.8	0	56.619	56.925
393.9	0	56.598	56.915
394	0	56.598	56.905
394.1	0	56.556	56.885
394.2	0	56.514	56.855
394.3	0	56.494	56.825
394.4	0	56.452	56.795
394.5	0	56.41	56.765
394.6	0	56.368	56.735
394.7	0	56.326	56.705
394.8	0	56.284	56.675
394.9	0	56.242	56.645
395	0	56.2	56.615
395.1	0	56.158	56.585
395.2	0	56.116	56.555
395.3	0	56.075	56.525
395.4	0	56.054	56.495
395.5	0	56.012	56.465
395.6	0	55.97	56.435
395.7	0	55.949	56.405
395.8	0	55.907	56.375

395.9	0	55.886	56.345
396	0	55.844	56.315
396.1	0	55.802	56.29
396.2	0	55.781	56.27
396.3	0	55.739	56.25
396.4	0	55.718	56.23
396.5	0	55.677	56.21
396.6	0	55.635	56.19
396.7	0	55.614	56.17
396.8	0	55.572	56.15
396.9	0	55.551	56.13
397	0	55.509	56.11
397.1	0	55.488	56.115
397.2	0	55.488	56.145
397.3	0	55.467	56.175
397.4	0	55.488	56.205
397.5	0	55.488	56.235
397.6	0	55.509	56.265
397.7	0	55.551	56.295
397.8	0	55.572	56.325
397.9	0	55.614	56.355
398	0	55.656	56.385
398.1	0	55.656	56.415
398.2	0	55.739	56.445
398.3	0	55.781	56.475
398.4	0	55.823	56.505
398.5	0	55.865	56.535
398.6	0	55.865	56.565
398.7	0	55.949	56.595
398.8	0	55.991	56.625
398.9	0	56.033	56.655
399	0	56.033	56.685
399.1	0	56.096	56.72
399.2	0	56.179	56.76
399.3	0	56.221	56.8
399.4	0	56.221	56.84
399.5	0	56.263	56.88
399.6	0	56.305	56.92
399.7	0	56.389	56.96
399.8	0	56.431	57
399.9	0	56.431	57.04
400	0	56.473	57.08
400.1	0	56.556	57.12
400.2	0	56.598	57.16
400.3	0	56.598	57.2

400.4	0	56.64	57.24
400.5	0	56.682	57.28
400.6	0	56.766	57.32
400.7	0	56.808	57.36
400.8	0	56.808	57.4
400.9	0	56.85	57.44
401	0	56.892	57.48
401.1	0	56.975	57.515
401.2	0	56.975	57.545
401.3	0	57.017	57.575
401.4	0	57.059	57.605
401.5	0	57.101	57.635
401.6	0	57.185	57.665
401.7	0	57.185	57.695
401.8	0	57.227	57.725
401.9	0	57.269	57.755
402	0	57.31	57.785
402.1	0	57.352	57.81
402.2	0	57.394	57.83
402.3	0	57.436	57.85
402.4	0	57.478	57.87
402.5	0	57.52	57.89
402.6	0	57.541	57.91
402.7	0	57.583	57.93
402.8	0	57.625	57.95
402.9	0	57.667	57.97
403	0	57.708	57.99
403.1	0	57.75	58
403.2	0	57.792	58
403.3	0	57.834	58
403.4	0	57.876	58
403.5	0	57.918	58
403.6	0	57.939	58
403.7	0	57.981	58
403.8	0	58.023	58
403.9	0	58.044	58
404	0	58.085	58
404.1	0	58.106	58
404.2	0	58.148	58
404.3	0	58.169	58
404.4	0	58.211	58
404.5	0	58.232	58
404.6	0	58.274	58
404.7	0	58.295	58
404.8	0	58.316	58

404.9	0	58.337	58
405	0	58.358	58
405.1	0	58.358	58
405.2	0	58.379	58
405.3	0	58.4	58
405.4	0	58.421	58
405.5	0	58.442	58
405.6	0	58.463	58
405.7	0	58.483	58
405.8	0	58.504	58
405.9	0	58.525	58
406	0	58.546	58
406.1	0	58.567	58
406.2	0	58.567	58
406.3	0	58.588	58
406.4	0	58.588	58
406.5	0	58.567	58
406.6	0	58.546	58
406.7	0	58.546	58
406.8	0	58.525	58
406.9	0	58.504	58
407	0	58.504	58
407.1	0	58.463	58
407.2	0	58.442	58
407.3	0	58.421	58
407.4	0	58.421	58
407.5	0	58.379	58
407.6	0	58.358	58
407.7	0	58.337	58
407.8	0	58.316	58
407.9	0	58.316	58
408	0	58.295	58
408.1	0	58.274	57.995
408.2	0	58.253	57.985
408.3	0	58.253	57.975
408.4	0	58.232	57.965
408.5	0	58.211	57.955
408.6	0	58.19	57.945
408.7	0	58.169	57.935
408.8	0	58.169	57.925
408.9	0	58.169	57.915
409	0	58.127	57.905
409.1	0	58.127	57.895
409.2	0	58.127	57.885
409.3	0	58.106	57.875



409.4	0	58.106	57.865
409.5	0	58.085	57.855
409.6	0	58.065	57.845
409.7	0	58.065	57.835
409.8	0	58.044	57.825
409.9	0	58.044	57.815
410	0	58.023	57.805
410.1	0	58.023	57.795
410.2	0	58.002	57.785
410.3	0	58.002	57.775
410.4	0	57.981	57.765
410.5	0	57.981	57.755
410.6	0	57.96	57.745
410.7	0	57.939	57.735
410.8	0	57.939	57.725
410.9	0	57.918	57.715
411	0	57.918	57.705
411.1	0	57.897	57.7
411.2	0	57.897	57.7
411.3	0	57.876	57.7
411.4	0	57.855	57.7
411.5	0	57.855	57.7
411.6	0	57.855	57.7
411.7	0	57.855	57.7
411.8	0	57.834	57.7
411.9	0	57.834	57.7
412	0	57.813	57.7
412.1	0	57.813	57.705
412.2	0	57.813	57.715
412.3	0	57.813	57.725
412.4	0	57.792	57.735
412.5	0	57.792	57.745
412.6	0	57.792	57.755
412.7	0	57.792	57.765
412.8	0	57.792	57.775
412.9	0	57.792	57.785
413	0	57.792	57.795
413.1	0	57.792	57.805
413.2	0	57.792	57.815
413.3	0	57.792	57.825
413.4	0	57.813	57.835
413.5	0	57.813	57.845
413.6	0	57.813	57.855
413.7	0	57.813	57.865
413.8	0	57.813	57.875

413.9	0	57.813	57.885
414	0	57.834	57.895
414.1	0	57.834	57.905
414.2	0	57.834	57.915
414.3	0	57.834	57.925
414.4	0	57.855	57.935
414.5	0	57.855	57.945
414.6	0	57.855	57.955
414.7	0	57.855	57.965
414.8	0	57.855	57.975
414.9	0	57.876	57.985
415	0	57.876	57.995
415.1	0	57.876	58.005
415.2	0	57.897	58.015
415.3	0	57.897	58.025
415.4	0	57.918	58.035
415.5	0	57.939	58.045
415.6	0	57.96	58.055
415.7	0	57.981	58.065
415.8	0	58.002	58.075
415.9	0	58.002	58.085
416	0	58.023	58.095
416.1	0	58.044	58.115
416.2	0	58.065	58.145
416.3	0	58.106	58.175
416.4	0	58.127	58.205
416.5	0	58.148	58.235
416.6	0	58.169	58.265
416.7	0	58.169	58.295
416.8	0	58.232	58.325
416.9	0	58.274	58.355
417	0	58.295	58.385
417.1	0	58.295	58.425
417.2	0	58.379	58.475
417.3	0	58.421	58.525
417.4	0	58.463	58.575
417.5	0	58.463	58.625
417.6	0	58.483	58.675
417.7	0	58.567	58.725
417.8	0	58.609	58.775
417.9	0	58.63	58.825
418	0	58.63	58.875
418.1	0	58.672	58.91
418.2	0	58.756	58.93
418.3	0	58.798	58.95

418.4	0	58.798	58.97
418.5	0	58.84	58.99
418.6	0	58.902	59.01
418.7	0	58.944	59.03
418.8	0	58.944	59.05
418.9	0	58.986	59.07
419	0	59.028	59.09
419.1	0	59.091	59.115
419.2	0	59.133	59.145
419.3	0	59.133	59.175
419.4	0	59.154	59.205
419.5	0	59.196	59.235
419.6	0	59.258	59.265
419.7	0	59.258	59.295
419.8	0	59.279	59.325
419.9	0	59.321	59.355
420	0	59.321	59.385
420.1	0	59.384	59.42
420.2	0	59.384	59.46
420.3	0	59.405	59.5
420.4	0	59.426	59.54
420.5	0	59.447	59.58
420.6	0	59.468	59.62
420.7	0	59.489	59.66
420.8	0	59.51	59.7
420.9	0	59.531	59.74
421	0	59.594	59.78
421.1	0	59.594	59.805
421.2	0	59.615	59.815
421.3	0	59.656	59.825
421.4	0	59.677	59.835
421.5	0	59.719	59.845
421.6	0	59.74	59.855
421.7	0	59.782	59.865
421.8	0	59.803	59.875
421.9	0	59.845	59.885
422	0	59.866	59.895
422.1	0	59.887	59.9
422.2	0	59.929	59.9
422.3	0	59.95	59.9
422.4	0	59.971	59.9
422.5	0	59.992	59.9
422.6	0	60.013	59.9
422.7	0	60.034	59.9
422.8	0	60.054	59.9

422.9	0	60.075	59.9
423	0	60.096	59.9
423.1	0	60.117	59.895
423.2	0	60.117	59.885
423.3	0	60.138	59.875
423.4	0	60.159	59.865
423.5	0	60.159	59.855
423.6	0	60.159	59.845
423.7	0	60.138	59.835
423.8	0	60.138	59.825
423.9	0	60.117	59.815
424	0	60.117	59.805
424.1	0	60.117	59.79
424.2	0	60.096	59.77
424.3	0	60.096	59.75
424.4	0	60.075	59.73
424.5	0	60.075	59.71
424.6	0	60.054	59.69
424.7	0	60.054	59.67
424.8	0	60.034	59.65
424.9	0	60.034	59.63
425	0	60.013	59.61
425.1	0	60.013	59.59
425.2	0	59.992	59.57
425.3	0	59.971	59.55
425.4	0	59.95	59.53
425.5	0	59.95	59.51
425.6	0	59.929	59.49
425.7	0	59.908	59.47
425.8	0	59.866	59.45
425.9	0	59.866	59.43
426	0	59.803	59.41
426.1	0	59.782	59.39
426.2	0	59.74	59.37
426.3	0	59.698	59.35
426.4	0	59.698	59.33
426.5	0	59.615	59.31
426.6	0	59.573	59.29
426.7	0	59.552	59.27
426.8	0	59.552	59.25
426.9	0	59.468	59.23
427	0	59.426	59.21
427.1	0	59.384	59.195
427.2	0	59.384	59.185
427.3	0	59.363	59.175

427.4	0	59.3	59.165
427.5	0	59.258	59.155
427.6	0	59.217	59.145
427.7	0	59.217	59.135
427.8	0	59.196	59.125
427.9	0	59.133	59.115
428	0	59.091	59.105
428.1	0	59.091	59.095
428.2	0	59.07	59.085
428.3	0	59.028	59.075
428.4	0	58.965	59.065
428.5	0	58.923	59.055
428.6	0	58.923	59.045
428.7	0	58.902	59.035
428.8	0	58.861	59.025
428.9	0	58.819	59.015
429	0	58.819	59.005
429.1	0	58.798	58.995
429.2	0	58.777	58.985
429.3	0	58.756	58.975
429.4	0	58.735	58.965
429.5	0	58.735	58.955
429.6	0	58.714	58.945
429.7	0	58.714	58.935
429.8	0	58.693	58.925
429.9	0	58.693	58.915
430	0	58.672	58.905
430.1	0	58.651	58.89
430.2	0	58.651	58.87
430.3	0	58.609	58.85
430.4	0	58.609	58.83
430.5	0	58.609	58.81
430.6	0	58.588	58.79
430.7	0	58.567	58.77
430.8	0	58.567	58.75
430.9	0	58.546	58.73
431	0	58.525	58.71
431.1	0	58.525	58.695
431.2	0	58.504	58.685
431.3	0	58.483	58.675
431.4	0	58.463	58.665
431.5	0	58.463	58.655
431.6	0	58.442	58.645
431.7	0	58.421	58.635
431.8	0	58.421	58.625

431.9	0	58.4	58.615
432	0	58.4	58.605
432.1	0	58.379	58.595
432.2	0	58.379	58.585
432.3	0	58.379	58.575
432.4	0	58.358	58.565
432.5	0	58.358	58.555
432.6	0	58.358	58.545
432.7	0	58.358	58.535
432.8	0	58.358	58.525
432.9	0	58.337	58.515
433	0	58.337	58.505
433.1	0	58.337	58.495
433.2	0	58.337	58.485
433.3	0	58.337	58.475
433.4	0	58.337	58.465
433.5	0	58.316	58.455
433.6	0	58.316	58.445
433.7	0	58.316	58.435
433.8	0	58.316	58.425
433.9	0	58.316	58.415
434	0	58.316	58.405
434.1	0	58.316	58.4
434.2	0	58.295	58.4
434.3	0	58.295	58.4
434.4	0	58.295	58.4
434.5	0	58.295	58.4
434.6	0	58.295	58.4
434.7	0	58.295	58.4
434.8	0	58.274	58.4
434.9	0	58.274	58.4
435	0	58.274	58.4
435.1	0	58.274	58.395
435.2	0	58.274	58.385
435.3	0	58.253	58.375
435.4	0	58.253	58.365
435.5	0	58.253	58.355
435.6	0	58.253	58.345
435.7	0	58.253	58.335
435.8	0	58.232	58.325
435.9	0	58.232	58.315
436	0	58.232	58.305
436.1	0	58.232	58.295
436.2	0	58.232	58.285
436.3	0	58.232	58.275

436.4	0	58.232	58.265
436.5	0	58.211	58.255
436.6	0	58.211	58.245
436.7	0	58.211	58.235
436.8	0	58.211	58.225
436.9	0	58.211	58.215
437	0	58.19	58.205
437.1	0	58.19	58.195
437.2	0	58.19	58.185
437.3	0	58.19	58.175
437.4	0	58.19	58.165
437.5	0	58.169	58.155
437.6	0	58.169	58.145
437.7	0	58.169	58.135
437.8	0	58.169	58.125
437.9	0	58.148	58.115
438	0	58.148	58.105
438.1	0	58.127	58.095
438.2	0	58.127	58.085
438.3	0	58.127	58.075
438.4	0	58.127	58.065
438.5	0	58.106	58.055
438.6	0	58.106	58.045
438.7	0	58.106	58.035
438.8	0	58.085	58.025
438.9	0	58.085	58.015
439	0	58.065	58.005
439.1	0	58.065	57.995
439.2	0	58.065	57.985
439.3	0	58.065	57.975
439.4	0	58.044	57.965
439.5	0	58.044	57.955
439.6	0	58.044	57.945
439.7	0	58.044	57.935
439.8	0	58.023	57.925
439.9	0	58.023	57.915
440	0	58.023	57.905
440.1	0	58.023	57.9
440.2	0	58.023	57.9
440.3	0	58.002	57.9
440.4	0	58.002	57.9
440.5	0	58.002	57.9
440.6	0	58.002	57.9
440.7	0	57.981	57.9
440.8	0	57.981	57.9

440.9	0	57.981	57.9
441	0	57.981	57.9
441.1	0	57.981	57.9
441.2	0	57.981	57.9
441.3	0	57.981	57.9
441.4	0	57.981	57.9
441.5	0	57.981	57.9
441.6	0	57.981	57.9
441.7	0	57.981	57.9
441.8	0	58.002	57.9
441.9	0	58.002	57.9
442	0	58.002	57.9
442.1	0	58.023	57.9
442.2	0	58.023	57.9
442.3	0	58.023	57.9
442.4	0	58.044	57.9
442.5	0	58.044	57.9
442.6	0	58.044	57.9
442.7	0	58.065	57.9
442.8	0	58.065	57.9
442.9	0	58.085	57.9
443	0	58.085	57.9
443.1	0	58.106	57.9
443.2	0	58.106	57.9
443.3	0	58.127	57.9
443.4	0	58.127	57.9
443.5	0	58.148	57.9
443.6	0	58.148	57.9
443.7	0	58.169	57.9
443.8	0	58.19	57.9
443.9	0	58.19	57.9
444	0	58.211	57.9
444.1	0	58.211	57.905
444.2	0	58.232	57.915
444.3	0	58.253	57.925
444.4	0	58.253	57.935
444.5	0	58.274	57.945
444.6	0	58.274	57.955
444.7	0	58.295	57.965
444.8	0	58.316	57.975
444.9	0	58.337	57.985
445	0	58.337	57.995
445.1	0	58.337	58.005
445.2	0	58.358	58.015
445.3	0	58.379	58.025



445.4	0	58.379	58.035
445.5	0	58.379	58.045
445.6	0	58.421	58.055
445.7	0	58.421	58.065
445.8	0	58.442	58.075
445.9	0	58.442	58.085
446	0	58.442	58.095
446.1	0	58.463	58.1
446.2	0	58.483	58.1
446.3	0	58.483	58.1
446.4	0	58.483	58.1
446.5	0	58.483	58.1
446.6	0	58.504	58.1
446.7	0	58.504	58.1
446.8	0	58.504	58.1
446.9	0	58.504	58.1
447	0	58.504	58.1
447.1	0	58.504	58.105
447.2	0	58.483	58.115
447.3	0	58.483	58.125
447.4	0	58.483	58.135
447.5	0	58.463	58.145
447.6	0	58.463	58.155
447.7	0	58.463	58.165
447.8	0	58.442	58.175
447.9	0	58.442	58.185
448	0	58.442	58.195
448.1	0	58.442	58.2
448.2	0	58.421	58.2
448.3	0	58.421	58.2
448.4	0	58.421	58.2
448.5	0	58.421	58.2
448.6	0	58.421	58.2
448.7	0	58.4	58.2
448.8	0	58.4	58.2
448.9	0	58.4	58.2
449	0	58.4	58.2
449.1	0	58.4	58.2
449.2	0	58.379	58.2
449.3	0	58.379	58.2
449.4	0	58.379	58.2
449.5	0	58.379	58.2
449.6	0	58.379	58.2
449.7	0	58.358	58.2
449.8	0	58.358	58.2

449.9	0	58.358	58.2
450	0	58.358	58.2
450.1	0	58.358	58.195
450.2	0	58.358	58.185
450.3	0	58.337	58.175
450.4	0	58.337	58.165
450.5	0	58.337	58.155
450.6	0	58.337	58.145
450.7	0	58.337	58.135
450.8	0	58.337	58.125
450.9	0	58.316	58.115
451	0	58.316	58.105
451.1	0	58.316	58.095
451.2	0	58.316	58.085
451.3	0	58.316	58.075
451.4	0	58.316	58.065
451.5	0	58.295	58.055
451.6	0	58.295	58.045
451.7	0	58.295	58.035
451.8	0	58.295	58.025
451.9	0	58.295	58.015
452	0	58.274	58.005
452.1	0	58.274	58
452.2	0	58.274	58
452.3	0	58.274	58
452.4	0	58.274	58
452.5	0	58.274	58
452.6	0	58.253	58
452.7	0	58.253	58
452.8	0	58.253	58
452.9	0	58.253	58
453	0	58.232	58
453.1	0	58.232	58
453.2	0	58.232	58
453.3	0	58.232	58
453.4	0	58.232	58
453.5	0	58.211	58
453.6	0	58.211	58
453.7	0	58.211	58
453.8	0	58.211	58
453.9	0	58.19	58
454	0	58.19	58
454.1	0	58.19	58
454.2	0	58.169	58
454.3	0	58.169	58

454.4	0	58.169	58
454.5	0	58.169	58
454.6	0	58.148	58
454.7	0	58.148	58
454.8	0	58.148	58
454.9	0	58.127	58
455	0	58.127	58
455.1	0	58.127	58
455.2	0	58.127	58
455.3	0	58.127	58
455.4	0	58.127	58
455.5	0	58.127	58
455.6	0	58.106	58
455.7	0	58.106	58
455.8	0	58.106	58
455.9	0	58.106	58
456	0	58.106	58
456.1	0	58.106	58
456.2	0	58.106	58
456.3	0	58.106	58
456.4	0	58.085	58
456.5	0	58.085	58
456.6	0	58.085	58
456.7	0	58.085	58
456.8	0	58.085	58
456.9	0	58.085	58
457	0	58.085	58
457.1	0	58.085	57.995
457.2	0	58.085	57.985
457.3	0	58.085	57.975
457.4	0	58.085	57.965
457.5	0	58.085	57.955
457.6	0	58.085	57.945
457.7	0	58.065	57.935
457.8	0	58.065	57.925
457.9	0	58.065	57.915
458	0	58.065	57.905
458.1	0	58.065	57.9
458.2	0	58.065	57.9
458.3	0	58.065	57.9
458.4	0	58.085	57.9
458.5	0	58.085	57.9
458.6	0	58.106	57.9
458.7	0	58.106	57.9
458.8	0	58.106	57.9

458.9	0	58.127	57.9
459	0	58.127	57.9
459.1	0	58.127	57.905
459.2	0	58.148	57.915
459.3	0	58.148	57.925
459.4	0	58.169	57.935
459.5	0	58.169	57.945
459.6	0	58.19	57.955
459.7	0	58.19	57.965
459.8	0	58.19	57.975
459.9	0	58.211	57.985
460	0	58.211	57.995
460.1	0	58.232	58.005
460.2	0	58.232	58.015
460.3	0	58.232	58.025
460.4	0	58.253	58.035
460.5	0	58.253	58.045
460.6	0	58.253	58.055
460.7	0	58.253	58.065
460.8	0	58.274	58.075
460.9	0	58.274	58.085
461	0	58.274	58.095
461.1	0	58.274	58.1
461.2	0	58.274	58.1
461.3	0	58.274	58.1
461.4	0	58.274	58.1
461.5	0	58.295	58.1
461.6	0	58.295	58.1
461.7	0	58.295	58.1
461.8	0	58.295	58.1
461.9	0	58.295	58.1
462	0	58.295	58.1
462.1	0	58.295	58.105
462.2	0	58.295	58.115
462.3	0	58.295	58.125
462.4	0	58.316	58.135
462.5	0	58.316	58.145
462.6	0	58.316	58.155
462.7	0	58.316	58.165
462.8	0	58.316	58.175
462.9	0	58.316	58.185
463	0	58.316	58.195
463.1	0	58.316	58.205
463.2	0	58.316	58.215
463.3	0	58.316	58.225

463.4	0	58.316	58.235
463.5	0	58.337	58.245
463.6	0	58.337	58.255
463.7	0	58.337	58.265
463.8	0	58.337	58.275
463.9	0	58.337	58.285
464	0	58.337	58.295
464.1	0	58.358	58.3
464.2	0	58.358	58.3
464.3	0	58.358	58.3
464.4	0	58.358	58.3
464.5	0	58.358	58.3
464.6	0	58.379	58.3
464.7	0	58.379	58.3
464.8	0	58.379	58.3
464.9	0	58.379	58.3
465	0	58.4	58.3
465.1	0	58.4	58.3
465.2	0	58.4	58.3
465.3	0	58.4	58.3
465.4	0	58.421	58.3
465.5	0	58.421	58.3
465.6	0	58.421	58.3
465.7	0	58.421	58.3
465.8	0	58.421	58.3
465.9	0	58.421	58.3
466	0	58.442	58.3
466.1	0	58.442	58.295
466.2	0	58.442	58.285
466.3	0	58.442	58.275
466.4	0	58.442	58.265
466.5	0	58.463	58.255
466.6	0	58.463	58.245
466.7	0	58.463	58.235
466.8	0	58.463	58.225
466.9	0	58.463	58.215
467	0	58.463	58.205
467.1	0	58.463	58.195
467.2	0	58.483	58.185
467.3	0	58.483	58.175
467.4	0	58.483	58.165
467.5	0	58.483	58.155
467.6	0	58.483	58.145
467.7	0	58.483	58.135
467.8	0	58.463	58.125

467.9	0	58.442	58.115
468	0	58.442	58.105
468.1	0	58.421	58.095
468.2	0	58.421	58.085
468.3	0	58.4	58.075
468.4	0	58.379	58.065
468.5	0	58.358	58.055
468.6	0	58.337	58.045
468.7	0	58.316	58.035
468.8	0	58.295	58.025
468.9	0	58.253	58.015
469	0	58.232	58.005
469.1	0	58.211	57.99
469.2	0	58.19	57.97
469.3	0	58.148	57.95
469.4	0	58.127	57.93
469.5	0	58.065	57.91
469.6	0	58.002	57.89
469.7	0	57.939	57.87
469.8	0	57.876	57.85
469.9	0	57.792	57.83
470	0	57.729	57.81
470.1	0	57.687	57.785
470.2	0	57.646	57.755
470.3	0	57.604	57.725
470.4	0	57.562	57.695
470.5	0	57.52	57.665
470.6	0	57.478	57.635
470.7	0	57.457	57.605
470.8	0	57.436	57.575
470.9	0	57.415	57.545
471	0	57.394	57.515
471.1	0	57.373	57.48
471.2	0	57.373	57.44
471.3	0	57.352	57.4
471.4	0	57.352	57.36
471.5	0	57.331	57.32
471.6	0	57.331	57.28
471.7	0	57.31	57.24
471.8	0	57.31	57.2
471.9	0	57.31	57.16
472	0	57.269	57.12
472.1	0	57.269	57.095
472.2	0	57.248	57.085
472.3	0	57.227	57.075

472.4	0	57.206	57.065
472.5	0	57.185	57.055
472.6	0	57.185	57.045
472.7	0	57.164	57.035
472.8	0	57.143	57.025
472.9	0	57.122	57.015
473	0	57.122	57.005
473.1	0	57.101	56.98
473.2	0	57.101	56.94
473.3	0	57.059	56.9
473.4	0	57.038	56.86
473.5	0	57.017	56.82
473.6	0	56.996	56.78
473.7	0	56.996	56.74
473.8	0	56.975	56.7
473.9	0	56.954	56.66
474	0	56.933	56.62
474.1	0	56.933	56.575
474.2	0	56.892	56.525
474.3	0	56.85	56.475
474.4	0	56.829	56.425
474.5	0	56.829	56.375
474.6	0	56.808	56.325
474.7	0	56.766	56.275
474.8	0	56.724	56.225
474.9	0	56.703	56.175
475	0	56.703	56.125
475.1	0	56.682	56.095
475.2	0	56.619	56.085
475.3	0	56.598	56.075
475.4	0	56.577	56.065
475.5	0	56.577	56.055
475.6	0	56.556	56.045
475.7	0	56.494	56.035
475.8	0	56.452	56.025
475.9	0	56.452	56.015
476	0	56.431	56.005
476.1	0	56.389	55.99
476.2	0	56.326	55.97
476.3	0	56.326	55.95
476.4	0	56.305	55.93
476.5	0	56.263	55.91
476.6	0	56.221	55.89
476.7	0	56.137	55.87
476.8	0	56.137	55.85

476.9	0	56.075	55.83
477	0	56.033	55.81
477.1	0	55.991	55.785
477.2	0	55.886	55.755
477.3	0	55.886	55.725
477.4	0	55.844	55.695
477.5	0	55.781	55.665
477.6	0	55.718	55.635
477.7	0	55.677	55.605
477.8	0	55.614	55.575
477.9	0	55.551	55.545
478	0	55.509	55.515
478.1	0	55.467	55.485
478.2	0	55.404	55.455
478.3	0	55.362	55.425
478.4	0	55.32	55.395
478.5	0	55.279	55.365
478.6	0	55.237	55.335
478.7	0	55.195	55.305
478.8	0	55.153	55.275
478.9	0	55.111	55.245
479	0	55.069	55.215
479.1	0	55.027	55.195
479.2	0	55.006	55.185
479.3	0	54.964	55.175
479.4	0	54.943	55.165
479.5	0	54.902	55.155
479.6	0	54.902	55.145
479.7	0	54.881	55.135
479.8	0	54.86	55.125
479.9	0	54.839	55.115
480	0	54.818	55.105
480.1	0	54.818	55.095
480.2	0	54.818	55.085
480.3	0	54.818	55.075
480.4	0	54.818	55.065
480.5	0	54.818	55.055
480.6	0	54.818	55.045
480.7	0	54.818	55.035
480.8	0	54.839	55.025
480.9	0	54.839	55.015
481	0	54.86	55.005
481.1	0	54.86	54.995
481.2	0	54.86	54.985
481.3	0	54.881	54.975



481.4	0	54.881	54.965
481.5	0	54.902	54.955
481.6	0	54.902	54.945
481.7	0	54.923	54.935
481.8	0	54.923	54.925
481.9	0	54.923	54.915
482	0	54.943	54.905
482.1	0	54.943	54.9
482.2	0	54.943	54.9
482.3	0	54.964	54.9
482.4	0	54.964	54.9
482.5	0	54.964	54.9
482.6	0	54.964	54.9
482.7	0	54.985	54.9
482.8	0	54.985	54.9
482.9	0	54.985	54.9
483	0	54.985	54.9
483.1	0	54.985	54.9
483.2	0	54.985	54.9
483.3	0	54.985	54.9
483.4	0	55.006	54.9
483.5	0	55.006	54.9
483.6	0	55.006	54.9
483.7	0	55.006	54.9
483.8	0	55.006	54.9
483.9	0	55.006	54.9
484	0	55.006	54.9
484.1	0	55.027	54.9
484.2	0	55.027	54.9
484.3	0	55.027	54.9
484.4	0	55.027	54.9
484.5	0	55.027	54.9
484.6	0	55.048	54.9
484.7	0	55.048	54.9
484.8	0	55.048	54.9
484.9	0	55.069	54.9
485	0	55.069	54.9
485.1	0	55.09	54.9
485.2	0	55.111	54.9
485.3	0	55.111	54.9
485.4	0	55.111	54.9
485.5	0	55.132	54.9
485.6	0	55.153	54.9
485.7	0	55.153	54.9
485.8	0	55.153	54.9

485.9	0	55.174	54.9
486	0	55.174	54.9
486.1	0	55.174	54.9
486.2	0	55.195	54.9
486.3	0	55.195	54.9
486.4	0	55.216	54.9
486.5	0	55.237	54.9
486.6	0	55.237	54.9
486.7	0	55.237	54.9
486.8	0	55.258	54.9
486.9	0	55.258	54.9
487	0	55.279	54.9
487.1	0	55.279	54.905
487.2	0	55.3	54.915
487.3	0	55.3	54.925
487.4	0	55.3	54.935
487.5	0	55.3	54.945
487.6	0	55.3	54.955
487.7	0	55.32	54.965
487.8	0	55.32	54.975
487.9	0	55.32	54.985
488	0	55.32	54.995
488.1	0	55.341	55
488.2	0	55.341	55
488.3	0	55.341	55
488.4	0	55.341	55
488.5	0	55.362	55
488.6	0	55.362	55
488.7	0	55.362	55
488.8	0	55.362	55
488.9	0	55.383	55
489	0	55.383	55
489.1	0	55.383	55
489.2	0	55.404	55
489.3	0	55.404	55
489.4	0	55.404	55
489.5	0	55.404	55
489.6	0	55.425	55
489.7	0	55.425	55
489.8	0	55.425	55
489.9	0	55.425	55
490	0	55.425	55
490.1	0	55.425	55
490.2	0	55.425	55
490.3	0	55.425	55

490.4	0	55.425	55
490.5	0	55.404	55
490.6	0	55.404	55
490.7	0	55.404	55
490.8	0	55.404	55
490.9	0	55.404	55
491	0	55.383	55
491.1	0	55.383	55
491.2	0	55.383	55
491.3	0	55.383	55
491.4	0	55.362	55
491.5	0	55.362	55
491.6	0	55.362	55
491.7	0	55.362	55
491.8	0	55.341	55
491.9	0	55.341	55
492	0	55.341	55
492.1	0	55.341	55
492.2	0	55.341	55
492.3	0	55.341	55
492.4	0	55.341	55
492.5	0	55.32	55
492.6	0	55.32	55
492.7	0	55.32	55
492.8	0	55.32	55
492.9	0	55.3	55
493	0	55.3	55
493.1	0	55.3	55.005
493.2	0	55.3	55.015
493.3	0	55.279	55.025
493.4	0	55.258	55.035
493.5	0	55.258	55.045
493.6	0	55.258	55.055
493.7	0	55.237	55.065
493.8	0	55.216	55.075
493.9	0	55.216	55.085
494	0	55.195	55.095
494.1	0	55.195	55.1
494.2	0	55.195	55.1
494.3	0	55.174	55.1
494.4	0	55.153	55.1
494.5	0	55.153	55.1
494.6	0	55.153	55.1
494.7	0	55.132	55.1
494.8	0	55.111	55.1

494.9	0	55.111	55.1
495	0	55.111	55.1
495.1	0	55.09	55.095
495.2	0	55.09	55.085
495.3	0	55.069	55.075
495.4	0	55.069	55.065
495.5	0	55.048	55.055
495.6	0	55.048	55.045
495.7	0	55.027	55.035
495.8	0	55.027	55.025
495.9	0	55.027	55.015
496	0	55.006	55.005
496.1	0	55.006	54.995
496.2	0	54.985	54.985
496.3	0	54.985	54.975
496.4	0	54.964	54.965
496.5	0	54.964	54.955
496.6	0	54.943	54.945
496.7	0	54.943	54.935
496.8	0	54.943	54.925
496.9	0	54.923	54.915
497	0	54.923	54.905
497.1	0	54.902	54.9
497.2	0	54.902	54.9
497.3	0	54.902	54.9
497.4	0	54.881	54.9
497.5	0	54.881	54.9
497.6	0	54.86	54.9
497.7	0	54.86	54.9
497.8	0	54.839	54.9
497.9	0	54.839	54.9
498	0	54.818	54.9
498.1	0	54.818	54.895
498.2	0	54.818	54.885
498.3	0	54.797	54.874
498.4	0	54.797	54.865
498.5	0	54.776	54.855
498.6	0	54.776	54.845
498.7	0	54.776	54.835
498.8	0	54.755	54.825
498.9	0	54.755	54.815
499	0	54.734	54.805
499.1	0	54.734	54.795
499.2	0	54.734	54.785
499.3	0	54.713	54.775

499.4	0	54.713	54.765
499.5	0	54.692	54.755
499.6	0	54.692	54.745
499.7	0	54.692	54.735
499.8	0	54.671	54.725
499.9	0	54.671	54.715
500	0	54.671	54.705
500.1	0	54.65	54.695
500.2	0	54.65	54.685
500.3	0	54.65	54.675
500.4	0	54.629	54.665
500.5	0	54.629	54.655
500.6	0	54.629	54.645
500.7	0	54.608	54.635
500.8	0	54.608	54.625
500.9	0	54.587	54.615
501	0	54.587	54.605
501.1	0	54.587	54.59
501.2	0	54.566	54.57
501.3	0	54.566	54.55
501.4	0	54.566	54.53
501.5	0	54.566	54.51
501.6	0	54.545	54.49
501.7	0	54.545	54.47
501.8	0	54.525	54.45
501.9	0	54.525	54.43
502	0	54.525	54.41
502.1	0	54.504	54.395
502.2	0	54.504	54.385
502.3	0	54.504	54.375
502.4	0	54.504	54.365
502.5	0	54.483	54.355
502.6	0	54.483	54.345
502.7	0	54.483	54.335
502.8	0	54.483	54.325
502.9	0	54.462	54.315
503	0	54.441	54.305
503.1	0	54.441	54.3
503.2	0	54.441	54.3
503.3	0	54.441	54.3
503.4	0	54.42	54.3
503.5	0	54.42	54.3
503.6	0	54.399	54.3
503.7	0	54.399	54.3
503.8	0	54.399	54.3

503.9	0	54.399	54.3
504	0	54.378	54.3
504.1	0	54.357	54.295
504.2	0	54.357	54.285
504.3	0	54.357	54.275
504.4	0	54.357	54.265
504.5	0	54.336	54.255
504.6	0	54.336	54.245
504.7	0	54.336	54.235
504.8	0	54.315	54.225
504.9	0	54.315	54.215
505	0	54.294	54.205
505.1	0	54.294	54.195
505.2	0	54.294	54.185
505.3	0	54.294	54.175
505.4	0	54.273	54.165
505.5	0	54.273	54.155
505.6	0	54.252	54.145
505.7	0	54.252	54.135
505.8	0	54.231	54.125
505.9	0	54.231	54.115
506	0	54.231	54.105
506.1	0	54.21	54.1
506.2	0	54.21	54.1
506.3	0	54.189	54.1
506.4	0	54.189	54.1
506.5	0	54.168	54.1
506.6	0	54.168	54.1
506.7	0	54.147	54.1
506.8	0	54.127	54.1
506.9	0	54.127	54.1
507	0	54.106	54.1
507.1	0	54.085	54.1
507.2	0	54.064	54.1
507.3	0	54.043	54.1
507.4	0	54.022	54.1
507.5	0	54.001	54.1
507.6	0	53.98	54.1
507.7	0	53.959	54.1
507.8	0	53.938	54.1
507.9	0	53.917	54.1
508	0	53.896	54.1
508.1	0	53.875	54.095
508.2	0	53.833	54.085
508.3	0	53.812	54.075

508.4	0	53.791	54.065
508.5	0	53.77	54.055
508.6	0	53.749	54.045
508.7	0	53.729	54.035
508.8	0	53.708	54.025
508.9	0	53.687	54.015
509	0	53.666	54.005
509.1	0	53.624	54
509.2	0	53.603	54
509.3	0	53.582	54
509.4	0	53.561	54
509.5	0	53.54	54
509.6	0	53.519	54
509.7	0	53.498	54
509.8	0	53.477	54
509.9	0	53.477	54
510	0	53.477	54
510.1	0	53.477	54
510.2	0	53.477	54
510.3	0	53.477	54
510.4	0	53.477	54
510.5	0	53.498	54
510.6	0	53.498	54
510.7	0	53.498	54
510.8	0	53.519	54
510.9	0	53.519	54
511	0	53.519	54
511.1	0	53.54	54
511.2	0	53.54	54
511.3	0	53.561	54
511.4	0	53.561	54
511.5	0	53.561	54
511.6	0	53.561	54
511.7	0	53.582	54
511.8	0	53.582	54
511.9	0	53.603	54
512	0	53.603	54
512.1	0	53.603	54
512.2	0	53.624	54
512.3	0	53.624	54
512.4	0	53.645	54
512.5	0	53.645	54
512.6	0	53.645	54
512.7	0	53.666	54
512.8	0	53.687	54

512.9	0	53.687	54
513	0	53.687	54
513.1	0	53.708	54
513.2	0	53.708	54
513.3	0	53.708	54
513.4	0	53.729	54
513.5	0	53.729	54
513.6	0	53.749	54
513.7	0	53.749	54
513.8	0	53.749	54
513.9	0	53.77	54
514	0	53.77	54
514.1	0	53.791	54
514.2	0	53.791	54
514.3	0	53.791	54
514.4	0	53.812	54
514.5	0	53.812	54
514.6	0	53.812	54
514.7	0	53.833	54
514.8	0	53.854	54
514.9	0	53.854	54
515	0	53.875	54
515.1	0	53.875	54
515.2	0	53.875	54
515.3	0	53.896	54
515.4	0	53.896	54
515.5	0	53.896	54
515.6	0	53.917	54
515.7	0	53.917	54
515.8	0	53.938	54
515.9	0	53.938	54
516	0	53.959	54
516.1	0	53.959	54.005
516.2	0	53.959	54.015
516.3	0	53.98	54.025
516.4	0	53.98	54.035
516.5	0	54.001	54.045
516.6	0	54.001	54.055
516.7	0	54.001	54.065
516.8	0	54.022	54.075
516.9	0	54.022	54.085
517	0	54.043	54.095
517.1	0	54.043	54.105
517.2	0	54.064	54.115
517.3	0	54.064	54.125



517.4	0	54.064	54.135
517.5	0	54.085	54.145
517.6	0	54.085	54.155
517.7	0	54.106	54.165
517.8	0	54.106	54.175
517.9	0	54.127	54.185
518	0	54.147	54.195
518.1	0	54.147	54.215
518.2	0	54.168	54.245
518.3	0	54.189	54.275
518.4	0	54.21	54.305
518.5	0	54.231	54.335
518.6	0	54.252	54.365
518.7	0	54.273	54.395
518.8	0	54.294	54.425
518.9	0	54.294	54.455
519	0	54.315	54.485
519.1	0	54.336	54.515
519.2	0	54.357	54.545
519.3	0	54.378	54.575
519.4	0	54.42	54.605
519.5	0	54.441	54.635
519.6	0	54.462	54.665
519.7	0	54.483	54.695
519.8	0	54.504	54.725
519.9	0	54.525	54.755
520	0	54.545	54.785
520.1	0	54.566	54.805
520.2	0	54.587	54.815
520.3	0	54.608	54.825
520.4	0	54.629	54.835
520.5	0	54.65	54.845
520.6	0	54.65	54.855
520.7	0	54.692	54.865
520.8	0	54.713	54.875
520.9	0	54.734	54.885
521	0	54.755	54.895
521.1	0	54.755	54.905
521.2	0	54.797	54.915
521.3	0	54.818	54.925
521.4	0	54.839	54.935
521.5	0	54.839	54.945
521.6	0	54.86	54.955
521.7	0	54.902	54.965
521.8	0	54.923	54.975

521.9	0	54.964	54.985
522	0	54.964	54.995
522.1	0	54.985	55.005
522.2	0	55.027	55.015
522.3	0	55.048	55.025
522.4	0	55.048	55.035
522.5	0	55.09	55.045
522.6	0	55.132	55.055
522.7	0	55.153	55.065
522.8	0	55.153	55.075
522.9	0	55.174	55.085
523	0	55.216	55.095
523.1	0	55.258	55.105
523.2	0	55.279	55.115
523.3	0	55.279	55.125
523.4	0	55.3	55.135
523.5	0	55.341	55.145
523.6	0	55.383	55.155
523.7	0	55.383	55.165
523.8	0	55.425	55.175
523.9	0	55.425	55.185
524	0	55.467	55.195
524.1	0	55.488	55.2
524.2	0	55.509	55.2
524.3	0	55.53	55.2
524.4	0	55.551	55.2
524.5	0	55.593	55.2
524.6	0	55.593	55.2
524.7	0	55.614	55.2
524.8	0	55.635	55.2
524.9	0	55.635	55.2
525	0	55.656	55.2
525.1	0	55.656	55.205
525.2	0	55.677	55.215
525.3	0	55.677	55.225
525.4	0	55.698	55.235
525.5	0	55.698	55.245
525.6	0	55.718	55.255
525.7	0	55.718	55.265
525.8	0	55.739	55.275
525.9	0	55.739	55.285
526	0	55.739	55.295
526.1	0	55.76	55.305
526.2	0	55.76	55.315
526.3	0	55.781	55.325

526.4	0	55.781	55.335
526.5	0	55.781	55.345
526.6	0	55.802	55.355
526.7	0	55.802	55.365
526.8	0	55.802	55.375
526.9	0	55.802	55.385
527	0	55.802	55.395
527.1	0	55.802	55.405
527.2	0	55.802	55.415
527.3	0	55.802	55.425
527.4	0	55.802	55.435
527.5	0	55.781	55.445
527.6	0	55.781	55.455
527.7	0	55.781	55.465
527.8	0	55.781	55.475
527.9	0	55.781	55.485
528	0	55.781	55.495
528.1	0	55.781	55.505
528.2	0	55.781	55.515
528.3	0	55.781	55.525
528.4	0	55.76	55.535
528.5	0	55.76	55.545
528.6	0	55.76	55.555
528.7	0	55.76	55.565
528.8	0	55.76	55.575
528.9	0	55.76	55.585
529	0	55.76	55.595
529.1	0	55.76	55.605
529.2	0	55.76	55.615
529.3	0	55.739	55.625
529.4	0	55.739	55.635
529.5	0	55.739	55.645
529.6	0	55.739	55.655
529.7	0	55.739	55.665
529.8	0	55.739	55.675
529.9	0	55.739	55.685
530	0	55.739	55.695
530.1	0	55.739	55.705
530.2	0	55.739	55.715
530.3	0	55.739	55.725
530.4	0	55.739	55.735
530.5	0	55.739	55.745
530.6	0	55.718	55.755
530.7	0	55.718	55.765
530.8	0	55.718	55.775

530.9	0	55.718	55.785
531	0	55.739	55.795
531.1	0	55.739	55.805
531.2	0	55.739	55.815
531.3	0	55.739	55.825
531.4	0	55.76	55.835
531.5	0	55.76	55.845
531.6	0	55.76	55.855
531.7	0	55.781	55.865
531.8	0	55.802	55.875
531.9	0	55.802	55.885
532	0	55.802	55.895
532.1	0	55.823	55.905
532.2	0	55.823	55.915
532.3	0	55.844	55.925
532.4	0	55.844	55.935
532.5	0	55.844	55.945
532.6	0	55.865	55.955
532.7	0	55.865	55.965
532.8	0	55.886	55.975
532.9	0	55.886	55.985
533	0	55.886	55.995
533.1	0	55.886	56
533.2	0	55.886	56
533.3	0	55.886	56
533.4	0	55.886	56
533.5	0	55.907	56
533.6	0	55.907	56
533.7	0	55.907	56
533.8	0	55.907	56
533.9	0	55.907	56
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534.1	0	55.928	56
534.2	0	55.928	56
534.3	0	55.928	56
534.4	0	55.949	56
534.5	0	55.949	56
534.6	0	55.949	56
534.7	0	55.97	56
534.8	0	55.97	56
534.9	0	55.97	56
535	0	55.97	56
535.1	0	55.991	56
535.2	0	55.991	56
535.3	0	55.991	56

535.4	0	55.991	56
535.5	0	56.012	56
535.6	0	56.012	56
535.7	0	56.012	56
535.8	0	56.033	56
535.9	0	56.033	56
536	0	56.033	56
536.1	0	56.033	56
536.2	0	56.054	56
536.3	0	56.054	56
536.4	0	56.054	56
536.5	0	56.075	56
536.6	0	56.075	56
536.7	0	56.075	56
536.8	0	56.075	56
536.9	0	56.075	56
537	0	56.096	56
537.1	0	56.096	56
537.2	0	56.096	56
537.3	0	56.116	56
537.4	0	56.116	56
537.5	0	56.116	56
537.6	0	56.116	56
537.7	0	56.137	56
537.8	0	56.137	56
537.9	0	56.137	56
538	0	56.158	56
538.1	0	56.158	56
538.2	0	56.158	56
538.3	0	56.179	56
538.4	0	56.179	56
538.5	0	56.179	56
538.6	0	56.179	56
538.7	0	56.179	56
538.8	0	56.2	56
538.9	0	56.2	56
539	0	56.2	56
539.1	0	56.2	56
539.2	0	56.2	56
539.3	0	56.2	56
539.4	0	56.2	56
539.5	0	56.2	56
539.6	0	56.2	56
539.7	0	56.2	56
539.8	0	56.2	56

539.9	0	56.2	56
540	0	56.2	56
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540.2	0	56.2	56
540.3	0	56.2	56
540.4	0	56.2	56
540.5	0	56.2	56
540.6	0	56.2	56
540.7	0	56.2	56
540.8	0	56.2	56
540.9	0	56.2	56
541	0	56.179	56
541.1	0	56.179	56
541.2	0	56.179	56
541.3	0	56.179	56
541.4	0	56.179	56
541.5	0	56.158	56
541.6	0	56.158	56
541.7	0	56.158	56
541.8	0	56.158	56
541.9	0	56.158	56
542	0	56.137	56
542.1	0	56.137	56
542.2	0	56.137	56
542.3	0	56.137	56
542.4	0	56.116	56
542.5	0	56.116	56
542.6	0	56.116	56
542.7	0	56.116	56
542.8	0	56.116	56
542.9	0	56.096	56
543	0	56.096	56
543.1	0	56.096	56
543.2	0	56.096	56
543.3	0	56.096	56
543.4	0	56.096	56
543.5	0	56.075	56
543.6	0	56.075	56
543.7	0	56.075	56
543.8	0	56.075	56
543.9	0	56.075	56
544	0	56.075	56
544.1	0	56.075	56
544.2	0	56.075	56
544.3	0	56.075	56

544.4	0	56.054	56
544.5	0	56.054	56
544.6	0	56.054	56
544.7	0	56.054	56
544.8	0	56.054	56
544.9	0	56.054	56
545	0	56.033	56
545.1	0	56.033	56
545.2	0	56.033	56
545.3	0	56.033	56
545.4	0	56.033	56
545.5	0	56.033	56
545.6	0	56.012	56
545.7	0	56.012	56
545.8	0	56.012	56
545.9	0	56.012	56
546	0	56.012	56
546.1	0	56.012	55.995
546.2	0	56.012	55.985
546.3	0	55.991	55.975
546.4	0	55.991	55.965
546.5	0	55.991	55.955
546.6	0	55.991	55.945
546.7	0	55.991	55.935
546.8	0	55.991	55.925
546.9	0	55.991	55.915
547	0	55.991	55.905
547.1	0	55.97	55.9
547.2	0	55.97	55.9
547.3	0	55.97	55.9
547.4	0	55.97	55.9
547.5	0	55.97	55.9
547.6	0	55.97	55.9
547.7	0	55.97	55.9
547.8	0	55.97	55.9
547.9	0	55.97	55.9
548	0	55.949	55.9
548.1	0	55.949	55.9
548.2	0	55.949	55.9
548.3	0	55.949	55.9
548.4	0	55.928	55.9
548.5	0	55.928	55.9
548.6	0	55.907	55.9
548.7	0	55.907	55.9
548.8	0	55.886	55.9

548.9	0	55.886	55.9
549	0	55.865	55.9
549.1	0	55.865	55.895
549.2	0	55.844	55.885
549.3	0	55.844	55.875
549.4	0	55.823	55.865
549.5	0	55.802	55.855
549.6	0	55.802	55.845
549.7	0	55.781	55.835
549.8	0	55.781	55.825
549.9	0	55.76	55.815
550	0	55.739	55.805
550.1	0	55.739	55.79
550.2	0	55.739	55.77
550.3	0	55.718	55.75
550.4	0	55.698	55.73
550.5	0	55.677	55.71
550.6	0	55.656	55.69
550.7	0	55.656	55.67
550.8	0	55.635	55.65
550.9	0	55.593	55.63
551	0	55.572	55.61
551.1	0	55.572	55.59
551.2	0	55.551	55.57
551.3	0	55.53	55.55
551.4	0	55.488	55.53
551.5	0	55.467	55.51
551.6	0	55.467	55.49
551.7	0	55.446	55.47
551.8	0	55.425	55.45
551.9	0	55.383	55.43
552	0	55.383	55.41
552.1	0	55.362	55.39
552.2	0	55.341	55.37
552.3	0	55.32	55.35
552.4	0	55.279	55.33
552.5	0	55.279	55.31
552.6	0	55.258	55.29
552.7	0	55.237	55.27
552.8	0	55.216	55.25
552.9	0	55.195	55.23
553	0	55.174	55.21
553.1	0	55.153	55.195
553.2	0	55.132	55.185
553.3	0	55.111	55.175



553.4	0	55.09	55.165
553.5	0	55.069	55.155
553.6	0	55.048	55.145
553.7	0	55.027	55.135
553.8	0	55.006	55.125
553.9	0	54.985	55.115
554	0	54.985	55.105
554.1	0	54.964	55.095
554.2	0	54.943	55.085
554.3	0	54.923	55.075
554.4	0	54.902	55.065
554.5	0	54.881	55.055
554.6	0	54.86	55.045
554.7	0	54.839	55.035
554.8	0	54.818	55.025
554.9	0	54.797	55.015
555	0	54.776	55.005
555.1	0	54.755	54.995
555.2	0	54.734	54.985
555.3	0	54.713	54.975
555.4	0	54.692	54.965
555.5	0	54.692	54.955
555.6	0	54.671	54.945
555.7	0	54.65	54.935
555.8	0	54.629	54.925
555.9	0	54.608	54.915
556	0	54.587	54.905
556.1	0	54.566	54.885
556.2	0	54.545	54.855
556.3	0	54.525	54.825
556.4	0	54.504	54.795
556.5	0	54.504	54.765
556.6	0	54.483	54.735
556.7	0	54.462	54.705
556.8	0	54.441	54.675
556.9	0	54.42	54.645
557	0	54.42	54.615
557.1	0	54.399	54.59
557.2	0	54.378	54.57
557.3	0	54.357	54.55
557.4	0	54.336	54.53
557.5	0	54.315	54.51
557.6	0	54.294	54.49
557.7	0	54.294	54.47
557.8	0	54.273	54.45

557.9	0	54.252	54.43
558	0	54.231	54.41
558.1	0	54.21	54.39
558.2	0	54.189	54.37
558.3	0	54.168	54.35
558.4	0	54.147	54.33
558.5	0	54.127	54.31
558.6	0	54.127	54.29
558.7	0	54.106	54.27
558.8	0	54.085	54.25
558.9	0	54.064	54.23
559	0	54.043	54.21
559.1	0	54.043	54.195
559.2	0	54.001	54.185
559.3	0	54.001	54.175
559.4	0	53.98	54.165
559.5	0	53.98	54.155
559.6	0	53.959	54.145
559.7	0	53.917	54.135
559.8	0	53.896	54.125
559.9	0	53.875	54.115
560	0	53.875	54.105
560.1	0	53.854	54.085
560.2	0	53.812	54.055
560.3	0	53.791	54.025
560.4	0	53.791	53.995
560.5	0	53.77	53.965
560.6	0	53.749	53.935
560.7	0	53.708	53.905
560.8	0	53.687	53.875
560.9	0	53.687	53.845
561	0	53.666	53.815
561.1	0	53.645	53.78
561.2	0	53.624	53.74
561.3	0	53.624	53.7
561.4	0	53.603	53.66
561.5	0	53.582	53.62
561.6	0	53.54	53.58
561.7	0	53.54	53.54
561.8	0	53.519	53.5
561.9	0	53.498	53.46
562	0	53.456	53.42
562.1	0	53.393	53.395
562.2	0	53.393	53.385
562.3	0	53.352	53.375

562.4	0	53.31	53.365
562.5	0	53.289	53.355
562.6	0	53.226	53.345
562.7	0	53.226	53.335
562.8	0	53.184	53.325
562.9	0	53.184	53.315
563	0	53.121	53.305
563.1	0	53.1	53.29
563.2	0	53.079	53.27
563.3	0	53.037	53.25
563.4	0	53.016	53.23
563.5	0	52.995	53.21
563.6	0	52.974	53.19
563.7	0	52.954	53.17
563.8	0	52.933	53.15
563.9	0	52.891	53.13
564	0	52.87	53.11
564.1	0	52.849	53.09
564.2	0	52.828	53.07
564.3	0	52.807	53.05
564.4	0	52.765	53.03
564.5	0	52.744	53.01
564.6	0	52.723	52.99
564.7	0	52.702	52.97
564.8	0	52.681	52.95
564.9	0	52.66	52.93
565	0	52.618	52.91
565.1	0	52.597	52.885
565.2	0	52.576	52.855
565.3	0	52.556	52.825
565.4	0	52.514	52.795
565.5	0	52.493	52.765
565.6	0	52.472	52.735
565.7	0	52.451	52.705
565.8	0	52.43	52.675
565.9	0	52.409	52.645
566	0	52.367	52.615
566.1	0	52.346	52.59
566.2	0	52.304	52.57
566.3	0	52.283	52.55
566.4	0	52.262	52.53
566.5	0	52.22	52.51
566.6	0	52.199	52.49
566.7	0	52.178	52.47
566.8	0	52.137	52.45

566.9	0	52.116	52.43
567	0	52.074	52.41
567.1	0	52.053	52.39
567.2	0	52.032	52.37
567.3	0	51.99	52.35
567.4	0	51.969	52.33
567.5	0	51.969	52.31
567.6	0	51.906	52.29
567.7	0	51.906	52.27
567.8	0	51.885	52.25
567.9	0	51.885	52.23
568	0	51.885	52.21
568.1	0	51.885	52.195
568.2	0	51.885	52.185
568.3	0	51.885	52.175
568.4	0	51.885	52.165
568.5	0	51.906	52.155
568.6	0	51.906	52.145
568.7	0	51.906	52.135
568.8	0	51.906	52.125
568.9	0	51.927	52.115
569	0	51.927	52.105
569.1	0	51.927	52.095
569.2	0	51.948	52.085
569.3	0	51.948	52.075
569.4	0	51.948	52.065
569.5	0	51.948	52.055
569.6	0	51.948	52.045
569.7	0	51.948	52.035
569.8	0	51.948	52.025
569.9	0	51.948	52.015
570	0	51.948	52.005
570.1	0	51.948	52
570.2	0	51.948	52
570.3	0	51.948	52
570.4	0	51.948	52
570.5	0	51.948	52
570.6	0	51.948	52
570.7	0	51.948	52
570.8	0	51.948	52
570.9	0	51.948	52
571	0	51.948	52
571.1	0	51.948	52
571.2	0	51.948	52
571.3	0	51.948	52

571.4	0	51.948	52
571.5	0	51.948	52
571.6	0	51.948	52
571.7	0	51.948	52
571.8	0	51.948	52
571.9	0	51.948	52
572	0	51.948	52
572.1	0	51.927	52
572.2	0	51.927	52
572.3	0	51.927	52
572.4	0	51.927	52
572.5	0	51.927	52
572.6	0	51.927	52
572.7	0	51.927	52
572.8	0	51.927	52
572.9	0	51.927	52
573	0	51.927	52
573.1	0	51.927	52.005
573.2	0	51.927	52.015
573.3	0	51.927	52.025
573.4	0	51.927	52.035
573.5	0	51.927	52.045
573.6	0	51.906	52.055
573.7	0	51.906	52.065
573.8	0	51.906	52.075
573.9	0	51.906	52.085
574	0	51.906	52.095
574.1	0	51.906	52.095
574.2	0	51.906	52.085
574.3	0	51.906	52.075
574.4	0	51.906	52.065
574.5	0	51.906	52.055
574.6	0	51.906	52.045
574.7	0	51.906	52.035
574.8	0	51.906	52.025
574.9	0	51.906	52.015
575	0	51.906	52.005
575.1	0	51.906	52
575.2	0	51.906	52
575.3	0	51.906	52
575.4	0	51.906	52
575.5	0	51.906	52
575.6	0	51.906	52
575.7	0	51.885	52
575.8	0	51.885	52

575.9	0	51.885	52
576	0	51.864	52
576.1	0	51.843	51.995
576.2	0	51.843	51.985
576.3	0	51.822	51.975
576.4	0	51.801	51.965
576.5	0	51.78	51.955
576.6	0	51.76	51.945
576.7	0	51.739	51.935
576.8	0	51.697	51.925
576.9	0	51.676	51.915
577	0	51.634	51.905
577.1	0	51.634	51.885
577.2	0	51.571	51.855
577.3	0	51.529	51.825
577.4	0	51.487	51.795
577.5	0	51.466	51.765
577.6	0	51.466	51.735
577.7	0	51.383	51.705
577.8	0	51.341	51.675
577.9	0	51.299	51.645
578	0	51.299	51.615
578.1	0	51.278	51.59
578.2	0	51.194	51.57
578.3	0	51.152	51.55
578.4	0	51.11	51.53
578.5	0	51.11	51.51
578.6	0	51.047	51.49
578.7	0	51.026	51.47
578.8	0	51.005	51.45
578.9	0	51.005	51.43
579	0	50.964	51.41
579.1	0	50.901	51.385
579.2	0	50.88	51.355
579.3	0	50.88	51.325
579.4	0	50.859	51.295
579.5	0	50.838	51.265
579.6	0	50.775	51.235
579.7	0	50.775	51.205
579.8	0	50.733	51.175
579.9	0	50.712	51.145
580	0	50.649	51.115
580.1	0	50.607	51.08
580.2	0	50.607	51.04
580.3	0	50.566	51

580.4	0	50.545	50.96
580.5	0	50.461	50.92
580.6	0	50.461	50.88
580.7	0	50.419	50.84
580.8	0	50.377	50.8
580.9	0	50.314	50.76
581	0	50.272	50.72
581.1	0	50.209	50.68
581.2	0	50.168	50.64
581.3	0	50.105	50.6
581.4	0	49.979	50.56
581.5	0	49.979	50.52
581.6	0	49.937	50.48
581.7	0	49.874	50.44
581.8	0	49.811	50.4
581.9	0	49.77	50.36
582	0	49.707	50.32
582.1	0	49.665	50.275
582.2	0	49.602	50.225
582.3	0	49.56	50.175
582.4	0	49.497	50.125
582.5	0	49.455	50.075
582.6	0	49.414	50.025
582.7	0	49.351	49.975
582.8	0	49.309	49.925
582.9	0	49.246	49.875
583	0	49.204	49.825
583.1	0	49.162	49.775
583.2	0	49.099	49.725
583.3	0	49.057	49.675
583.4	0	49.016	49.625
583.5	0	48.974	49.575
583.6	0	48.932	49.525
583.7	0	48.869	49.475
583.8	0	48.827	49.425
583.9	0	48.785	49.375
584	0	48.743	49.325
584.1	0	48.701	49.27
584.2	0	48.638	49.21
584.3	0	48.618	49.15
584.4	0	48.555	49.09
584.5	0	48.513	49.03
584.6	0	48.471	48.97
584.7	0	48.45	48.91
584.8	0	48.408	48.85

584.9	0	48.366	48.79
585	0	48.324	48.73
585.1	0	48.303	48.675
585.2	0	48.282	48.625
585.3	0	48.24	48.575
585.4	0	48.24	48.525
585.5	0	48.22	48.475
585.6	0	48.178	48.425
585.7	0	48.157	48.375
585.8	0	48.136	48.325
585.9	0	48.115	48.275
586	0	48.094	48.225
586.1	0	48.073	48.195
586.2	0	48.052	48.185
586.3	0	48.031	48.175
586.4	0	48.01	48.165
586.5	0	47.989	48.155
586.6	0	47.968	48.145
586.7	0	47.968	48.135
586.8	0	47.947	48.125
586.9	0	47.947	48.115
587	0	47.926	48.105
587.1	0	47.926	48.095
587.2	0	47.926	48.085
587.3	0	47.905	48.075
587.4	0	47.905	48.065
587.5	0	47.905	48.055
587.6	0	47.905	48.045
587.7	0	47.905	48.035
587.8	0	47.905	48.025
587.9	0	47.905	48.015
588	0	47.905	48.005
588.1	0	47.905	48
588.2	0	47.905	48
588.3	0	47.926	48
588.4	0	47.926	48
588.5	0	47.926	48
588.6	0	47.947	48
588.7	0	47.968	48
588.8	0	47.968	48
588.9	0	47.968	48
589	0	47.968	48
589.1	0	47.989	48.005
589.2	0	48.01	48.015
589.3	0	48.01	48.025



589.4	0	48.01	48.035
589.5	0	48.01	48.045
589.6	0	48.031	48.055
589.7	0	48.031	48.065
589.8	0	48.031	48.075
589.9	0	48.052	48.085
590	0	48.052	48.095
590.1	0	48.073	48.115
590.2	0	48.073	48.145
590.3	0	48.094	48.175
590.4	0	48.115	48.205
590.5	0	48.136	48.235
590.6	0	48.199	48.265
590.7	0	48.199	48.295
590.8	0	48.24	48.325
590.9	0	48.261	48.355
591	0	48.303	48.385
591.1	0	48.345	48.425
591.2	0	48.387	48.475
591.3	0	48.429	48.525
591.4	0	48.45	48.575
591.5	0	48.492	48.625
591.6	0	48.534	48.675
591.7	0	48.576	48.725
591.8	0	48.618	48.775
591.9	0	48.659	48.825
592	0	48.701	48.875
592.1	0	48.743	48.905
592.2	0	48.785	48.915
592.3	0	48.827	48.925
592.4	0	48.848	48.935
592.5	0	48.89	48.945
592.6	0	48.932	48.955
592.7	0	48.974	48.965
592.8	0	49.016	48.975
592.9	0	49.057	48.985
593	0	49.078	48.995
593.1	0	49.12	49.005
593.2	0	49.141	49.015
593.3	0	49.183	49.025
593.4	0	49.204	49.035
593.5	0	49.225	49.045
593.6	0	49.246	49.055
593.7	0	49.267	49.065
593.8	0	49.267	49.075

593.9	0	49.288	49.085
594	0	49.309	49.095
594.1	0	49.309	49.1
594.2	0	49.33	49.1
594.3	0	49.33	49.1
594.4	0	49.351	49.1
594.5	0	49.351	49.1
594.6	0	49.372	49.1
594.7	0	49.372	49.1
594.8	0	49.372	49.1
594.9	0	49.372	49.1
595	0	49.351	49.1
595.1	0	49.351	49.095
595.2	0	49.33	49.085
595.3	0	49.33	49.075
595.4	0	49.33	49.065
595.5	0	49.309	49.055
595.6	0	49.309	49.045
595.7	0	49.288	49.035
595.8	0	49.288	49.025
595.9	0	49.267	49.015
596	0	49.267	49.005
596.1	0	49.246	49
596.2	0	49.246	49
596.3	0	49.246	49
596.4	0	49.246	49
596.5	0	49.225	49
596.6	0	49.225	49
596.7	0	49.225	49
596.8	0	49.225	49
596.9	0	49.225	49
597	0	49.204	49
597.1	0	49.204	48.995
597.2	0	49.204	48.985
597.3	0	49.183	48.975
597.4	0	49.141	48.965
597.5	0	49.141	48.955
597.6	0	49.141	48.945
597.7	0	49.12	48.935
597.8	0	49.099	48.925
597.9	0	49.057	48.915
598	0	49.036	48.905
598.1	0	49.036	48.885
598.2	0	49.016	48.855
598.3	0	48.932	48.825

598.4	0	48.89	48.795
598.5	0	48.89	48.765
598.6	0	48.848	48.735
598.7	0	48.806	48.705
598.8	0	48.701	48.675
598.9	0	48.638	48.645
599	0	48.638	48.615
599.1	0	48.597	48.585
599.2	0	48.555	48.555
599.3	0	48.45	48.525
599.4	0	48.45	48.495
599.5	0	48.408	48.465
599.6	0	48.366	48.433
599.7	0	48.282	48.405
599.8	0	48.282	48.375
599.9	0	48.24	48.345
600	0	48.199	48.315
600.1	0	48.157	48.285
600.2	0	48.136	48.255
600.3	0	48.094	48.225
600.4	0	48.073	48.195
600.5	0	48.031	48.165
600.6	0	48.01	48.135
600.7	0	47.989	48.105
600.8	0	47.968	48.075
600.9	0	47.947	48.045
601	0	47.926	48.015
601.1	0	47.926	47.995
601.2	0	47.905	47.985
601.3	0	47.884	47.975
601.4	0	47.863	47.965
601.5	0	47.863	47.955
601.6	0	47.842	47.945
601.7	0	47.822	47.935
601.8	0	47.822	47.925
601.9	0	47.801	47.915
602	0	47.78	47.905
602.1	0	47.78	47.895
602.2	0	47.78	47.885
602.3	0	47.759	47.875
602.4	0	47.759	47.865
602.5	0	47.759	47.855
602.6	0	47.738	47.845
602.7	0	47.717	47.835
602.8	0	47.717	47.825

602.9	0	47.696	47.815
603	0	47.675	47.805
603.1	0	47.654	47.795
603.2	0	47.654	47.785
603.3	0	47.633	47.775
603.4	0	47.612	47.765
603.5	0	47.591	47.755
603.6	0	47.591	47.745
603.7	0	47.57	47.735
603.8	0	47.549	47.725
603.9	0	47.549	47.715
604	0	47.528	47.705
604.1	0	47.528	47.71
604.2	0	47.528	47.73
604.3	0	47.528	47.75
604.4	0	47.549	47.77
604.5	0	47.549	47.79
604.6	0	47.549	47.81
604.7	0	47.57	47.83
604.8	0	47.57	47.85
604.9	0	47.591	47.87
605	0	47.591	47.89
605.1	0	47.633	47.92
605.2	0	47.675	47.96
605.3	0	47.717	48
605.4	0	47.759	48.04
605.5	0	47.801	48.08
605.6	0	47.842	48.12
605.7	0	47.905	48.16
605.8	0	47.947	48.2
605.9	0	47.947	48.24
606	0	48.052	48.28
606.1	0	48.115	48.335
606.2	0	48.178	48.405
606.3	0	48.178	48.475
606.4	0	48.22	48.545
606.5	0	48.324	48.615
606.6	0	48.387	48.685
606.7	0	48.45	48.755
606.8	0	48.45	48.825
606.9	0	48.492	48.895
607	0	48.597	48.965
607.1	0	48.638	49.005
607.2	0	48.638	49.015
607.3	0	48.68	49.025

607.4	0	48.764	49.035
607.5	0	48.827	49.045
607.6	0	48.827	49.055
607.7	0	48.848	49.065
607.8	0	48.89	49.075
607.9	0	48.953	49.085
608	0	48.995	49.095
608.1	0	48.995	49.095
608.2	0	49.016	49.085
608.3	0	49.036	49.075
608.4	0	49.057	49.065
608.5	0	49.057	49.055
608.6	0	49.057	49.045
608.7	0	49.057	49.035
608.8	0	49.078	49.025
608.9	0	49.078	49.015
609	0	49.078	49.005
609.1	0	49.057	48.995
609.2	0	49.036	48.985
609.3	0	48.974	48.975
609.4	0	48.974	48.965
609.5	0	48.932	48.955
609.6	0	48.869	48.945
609.7	0	48.785	48.935
609.8	0	48.722	48.925
609.9	0	48.659	48.915
610	0	48.576	48.905
610.1	0	48.492	48.855
610.2	0	48.429	48.765
610.3	0	48.345	48.675
610.4	0	48.261	48.585
610.5	0	48.178	48.495
610.6	0	48.094	48.405
610.7	0	48.031	48.315
610.8	0	47.947	48.225
610.9	0	47.863	48.135
611	0	47.78	48.045
611.1	0	47.696	47.955
611.2	0	47.633	47.865
611.3	0	47.549	47.775
611.4	0	47.465	47.685
611.5	0	47.382	47.595
611.6	0	47.319	47.505
611.7	0	47.235	47.415
611.8	0	47.151	47.325

611.9	0	47.067	47.235
612	0	47.005	47.145
612.1	0	46.921	47.055
612.2	0	46.837	46.965
612.3	0	46.774	46.875
612.4	0	46.69	46.785
612.5	0	46.607	46.695
612.6	0	46.523	46.605
612.7	0	46.46	46.515
612.8	0	46.397	46.425
612.9	0	46.334	46.335
613	0	46.271	46.245
613.1	0	46.23	46.195
613.2	0	46.188	46.185
613.3	0	46.125	46.175
613.4	0	46.104	46.165
613.5	0	46.041	46.155
613.6	0	46.02	46.145
613.7	0	45.978	46.135
613.8	0	45.957	46.125
613.9	0	45.936	46.115
614	0	45.894	46.105
614.1	0	45.873	46.1
614.2	0	45.853	46.1
614.3	0	45.853	46.1
614.4	0	45.832	46.1
614.5	0	45.832	46.1
614.6	0	45.832	46.1
614.7	0	45.853	46.1
614.8	0	45.853	46.1
614.9	0	45.894	46.1
615	0	45.894	46.1
615.1	0	45.957	46.105
615.2	0	45.999	46.115
615.3	0	46.02	46.125
615.4	0	46.02	46.135
615.5	0	46.104	46.145
615.6	0	46.167	46.155
615.7	0	46.209	46.165
615.8	0	46.251	46.175
615.9	0	46.251	46.185
616	0	46.355	46.195
616.1	0	46.397	46.235
616.2	0	46.46	46.305
616.3	0	46.46	46.375

616.4	0	46.502	46.445
616.5	0	46.607	46.515
616.6	0	46.669	46.585
616.7	0	46.669	46.655
616.8	0	46.711	46.725
616.9	0	46.774	46.795
617	0	46.879	46.865
617.1	0	46.942	46.945
617.2	0	46.942	47.035
617.3	0	46.984	47.125
617.4	0	47.109	47.215
617.5	0	47.172	47.305
617.6	0	47.172	47.395
617.7	0	47.235	47.485
617.8	0	47.277	47.575
617.9	0	47.403	47.665
618	0	47.403	47.755
618.1	0	47.465	47.86
618.2	0	47.528	47.98
618.3	0	47.654	48.1
618.4	0	47.654	48.22
618.5	0	47.717	48.34
618.6	0	47.78	48.46
618.7	0	47.842	48.58
618.8	0	47.968	48.7
618.9	0	47.968	48.82
619	0	48.031	48.94
619.1	0	48.094	49.035
619.2	0	48.157	49.105
619.3	0	48.22	49.175
619.4	0	48.303	49.245
619.5	0	48.366	49.315
619.6	0	48.45	49.385
619.7	0	48.534	49.455
619.8	0	48.618	49.525
619.9	0	48.701	49.595
620	0	48.806	49.665
620.1	0	48.89	49.745
620.2	0	48.995	49.835
620.3	0	49.099	49.925
620.4	0	49.204	50.015
620.5	0	49.309	50.105
620.6	0	49.414	50.195
620.7	0	49.539	50.285
620.8	0	49.665	50.375

620.9	0	49.77	50.465
621	0	49.895	50.555
621.1	0	50.021	50.645
621.2	0	50.147	50.735
621.3	0	50.272	50.825
621.4	0	50.398	50.915
621.5	0	50.545	51.005
621.6	0	50.67	51.095
621.7	0	50.796	51.185
621.8	0	50.922	51.275
621.9	0	51.068	51.365
622	0	51.194	51.455
622.1	0	51.32	51.535
622.2	0	51.445	51.605
622.3	0	51.571	51.675
622.4	0	51.655	51.745
622.5	0	51.739	51.815
622.6	0	51.801	51.885
622.7	0	51.843	51.955
622.8	0	51.906	52.025
622.9	0	51.948	52.095
623	0	52.011	52.165
623.1	0	52.074	52.225
623.2	0	52.116	52.275
623.3	0	52.178	52.325
623.4	0	52.241	52.375
623.5	0	52.283	52.425
623.6	0	52.346	52.475
623.7	0	52.409	52.525
623.8	0	52.472	52.575
623.9	0	52.535	52.625
624	0	52.597	52.675
624.1	0	52.66	52.715
624.2	0	52.723	52.745
624.3	0	52.786	52.775
624.4	0	52.828	52.805
624.5	0	52.891	52.835
624.6	0	52.891	52.865
624.7	0	53.016	52.895
624.8	0	53.079	52.925
624.9	0	53.142	52.955
625	0	53.205	52.985
625.1	0	53.205	53.03
625.2	0	53.31	53.09
625.3	0	53.352	53.15



625.4	0	53.414	53.21
625.5	0	53.414	53.27
625.6	0	53.456	53.33
625.7	0	53.54	53.39
625.8	0	53.582	53.45
625.9	0	53.582	53.51
626	0	53.645	53.57
626.1	0	53.687	53.62
626.2	0	53.791	53.66
626.3	0	53.833	53.7
626.4	0	53.833	53.74
626.5	0	53.896	53.78
626.6	0	53.98	53.82
626.7	0	54.022	53.86
626.8	0	54.022	53.9
626.9	0	54.085	53.94
627	0	54.127	53.98
627.1	0	54.189	54.005
627.2	0	54.231	54.015
627.3	0	54.231	54.025
627.4	0	54.273	54.035
627.5	0	54.315	54.045
627.6	0	54.378	54.055
627.7	0	54.378	54.065
627.8	0	54.378	54.075
627.9	0	54.42	54.085
628	0	54.441	54.095
628.1	0	54.504	54.115
628.2	0	54.504	54.145
628.3	0	54.525	54.175
628.4	0	54.566	54.205
628.5	0	54.608	54.235
628.6	0	54.65	54.265
628.7	0	54.692	54.295
628.8	0	54.713	54.325
628.9	0	54.755	54.355
629	0	54.776	54.385
629.1	0	54.818	54.415
629.2	0	54.86	54.445
629.3	0	54.881	54.475
629.4	0	54.923	54.505
629.5	0	54.964	54.535
629.6	0	54.985	54.565
629.7	0	55.027	54.595
629.8	0	55.069	54.625

629.9	0	55.111	54.655
630	0	55.153	54.685
630.1	0	55.195	54.72
630.2	0	55.237	54.76
630.3	0	55.279	54.8
630.4	0	55.3	54.84
630.5	0	55.341	54.88
630.6	0	55.362	54.92
630.7	0	55.383	54.96
630.8	0	55.404	55
630.9	0	55.425	55.04
631	0	55.446	55.08
631.1	0	55.467	55.115
631.2	0	55.488	55.145
631.3	0	55.488	55.175
631.4	0	55.488	55.205
631.5	0	55.488	55.235
631.6	0	55.488	55.265
631.7	0	55.488	55.295
631.8	0	55.467	55.325
631.9	0	55.467	55.355
632	0	55.467	55.385
632.1	0	55.446	55.4
632.2	0	55.446	55.4
632.3	0	55.425	55.4
632.4	0	55.425	55.4
632.5	0	55.404	55.4
632.6	0	55.404	55.4
632.7	0	55.383	55.4
632.8	0	55.362	55.4
632.9	0	55.32	55.4
633	0	55.279	55.4
633.1	0	55.237	55.38
633.2	0	55.174	55.34
633.3	0	55.111	55.3
633.4	0	55.048	55.26
633.5	0	54.985	55.22
633.6	0	54.902	55.18
633.7	0	54.839	55.14
633.8	0	54.776	55.1
633.9	0	54.692	55.06
634	0	54.692	55.02
634.1	0	54.566	54.975
634.2	0	54.483	54.925
634.3	0	54.42	54.875

634.4	0	54.378	54.825
634.5	0	54.378	54.775
634.6	0	54.294	54.725
634.7	0	54.252	54.675
634.8	0	54.231	54.625
634.9	0	54.231	54.575
635	0	54.168	54.525
635.1	0	54.127	54.455
635.2	0	54.106	54.365
635.3	0	54.106	54.275
635.4	0	54.064	54.185
635.5	0	53.938	54.095
635.6	0	53.875	54.005
635.7	0	53.791	53.915
635.8	0	53.791	53.825
635.9	0	53.708	53.735
636	0	53.561	53.645
636.1	0	53.477	53.545
636.2	0	53.477	53.435
636.3	0	53.393	53.325
636.4	0	53.289	53.215
636.5	0	53.121	53.105
636.6	0	53.121	52.995
636.7	0	53.037	52.885
636.8	0	52.954	52.775
636.9	0	52.87	52.665
637	0	52.702	52.555
637.1	0	52.702	52.385
637.2	0	52.618	52.155
637.3	0	52.535	51.925
637.4	0	52.346	51.695
637.5	0	52.346	51.465
637.6	0	52.199	51.235
637.7	0	52.053	51.005
637.8	0	51.885	50.775
637.9	0	51.697	50.545
638	0	51.487	50.315
638.1	0	51.278	50.1
638.2	0	51.068	49.9
638.3	0	50.859	49.7
638.4	0	50.628	49.5
638.5	0	50.377	49.3
638.6	0	50.084	49.1
638.7	0	49.77	48.9
638.8	0	49.455	48.7

638.9	0	49.141	48.5
639	0	48.827	48.3
639.1	0	48.513	48.115
639.2	0	48.178	47.945
639.3	0	47.863	47.775
639.4	0	47.549	47.605
639.5	0	47.235	47.435
639.6	0	46.921	47.265
639.7	0	46.669	47.095
639.8	0	46.523	46.925
639.9	0	46.418	46.755
640	0	46.334	46.585
640.1	0	46.23	46.485
640.2	0	46.167	46.455
640.3	0	46.104	46.425
640.4	0	46.062	46.395
640.5	0	46.02	46.365
640.6	0	45.999	46.335
640.7	0	45.999	46.305
640.8	0	45.999	46.275
640.9	0	45.978	46.245
641	0	45.957	46.215
641.1	0	45.957	46.19
641.2	0	45.957	46.17
641.3	0	45.978	46.15
641.4	0	45.999	46.13
641.5	0	45.999	46.11
641.6	0	46.02	46.09
641.7	0	46.02	46.07
641.8	0	46.02	46.05
641.9	0	46.041	46.03
642	0	46.041	46.01
642.1	0	46.041	46
642.2	0	46.041	46
642.3	0	46.041	46
642.4	0	46.041	46
642.5	0	46.041	46
642.6	0	46.041	46
642.7	0	46.041	46
642.8	0	46.041	46
642.9	0	46.041	46
643	0	46.062	46
643.1	0	46.062	46.015
643.2	0	46.062	46.045
643.3	0	46.083	46.075

643.4	0	46.104	46.105
643.5	0	46.146	46.135
643.6	0	46.146	46.165
643.7	0	46.209	46.195
643.8	0	46.251	46.225
643.9	0	46.292	46.255
644	0	46.292	46.285
644.1	0	46.334	46.325
644.2	0	46.439	46.375
644.3	0	46.502	46.425
644.4	0	46.544	46.475
644.5	0	46.544	46.525
644.6	0	46.669	46.575
644.7	0	46.711	46.625
644.8	0	46.774	46.675
644.9	0	46.774	46.725
645	0	46.837	46.775
645.1	0	46.942	46.835
645.2	0	47.005	46.905
645.3	0	47.005	46.975
645.4	0	47.067	47.045
645.5	0	47.13	47.115
645.6	0	47.256	47.185
645.7	0	47.319	47.255
645.8	0	47.319	47.325
645.9	0	47.403	47.395
646	0	47.465	47.465
646.1	0	47.591	47.535
646.2	0	47.591	47.605
646.3	0	47.675	47.675
646.4	0	47.738	47.745
646.5	0	47.863	47.815
646.6	0	47.863	47.885
646.7	0	47.926	47.955
646.8	0	48.01	48.025
646.9	0	48.073	48.095
647	0	48.22	48.165
647.1	0	48.22	48.23
647.2	0	48.282	48.29
647.3	0	48.345	48.35
647.4	0	48.429	48.41
647.5	0	48.513	48.47
647.6	0	48.576	48.53
647.7	0	48.659	48.594
647.8	0	48.722	48.65

647.9	0	48.806	48.71
648	0	48.869	48.77
648.1	0	48.953	48.835
648.2	0	49.036	48.905
648.3	0	49.099	48.975
648.4	0	49.183	49.045
648.5	0	49.246	49.115
648.6	0	49.33	49.185
648.7	0	49.393	49.255
648.8	0	49.455	49.325
648.9	0	49.518	49.395
649	0	49.581	49.465
649.1	0	49.644	49.535
649.2	0	49.707	49.605
649.3	0	49.77	49.675
649.4	0	49.832	49.745
649.5	0	49.874	49.815
649.6	0	49.937	49.885
649.7	0	50	49.955
649.8	0	50.063	50.025
649.9	0	50.126	50.095
650	0	50.189	50.165
650.1	0	50.251	50.225
650.2	0	50.314	50.275
650.3	0	50.377	50.325
650.4	0	50.44	50.375
650.5	0	50.503	50.425
650.6	0	50.566	50.475
650.7	0	50.628	50.525
650.8	0	50.691	50.575
650.9	0	50.754	50.625
651	0	50.817	50.675
651.1	0	50.88	50.72
651.2	0	50.943	50.76
651.3	0	50.985	50.8
651.4	0	51.047	50.84
651.5	0	51.11	50.88
651.6	0	51.173	50.92
651.7	0	51.215	50.96
651.8	0	51.278	51
651.9	0	51.32	51.04
652	0	51.383	51.08
652.1	0	51.424	51.13
652.2	0	51.466	51.19
652.3	0	51.508	51.25

652.4	0	51.55	51.31
652.5	0	51.592	51.37
652.6	0	51.634	51.43
652.7	0	51.634	51.49
652.8	0	51.718	51.55
652.9	0	51.76	51.61
653	0	51.822	51.67
653.1	0	51.864	51.725
653.2	0	51.864	51.775
653.3	0	51.948	51.825
653.4	0	51.99	51.875
653.5	0	52.032	51.925
653.6	0	52.032	51.975
653.7	0	52.074	52.025
653.8	0	52.178	52.075
653.9	0	52.22	52.125
654	0	52.22	52.175
654.1	0	52.262	52.215
654.2	0	52.346	52.245
654.3	0	52.388	52.275
654.4	0	52.388	52.305
654.5	0	52.451	52.335
654.6	0	52.472	52.365
654.7	0	52.576	52.395
654.8	0	52.618	52.425
654.9	0	52.618	52.455
655	0	52.639	52.485
655.1	0	52.66	52.48
655.2	0	52.66	52.44
655.3	0	52.66	52.4
655.4	0	52.618	52.36
655.5	0	52.576	52.32
655.6	0	52.451	52.28
655.7	0	52.451	52.24
655.8	0	52.388	52.2
655.9	0	52.304	52.16
656	0	52.22	52.12
656.1	0	52.074	52.075
656.2	0	52.074	52.025
656.3	0	51.99	51.975
656.4	0	51.906	51.925
656.5	0	51.843	51.875
656.6	0	51.76	51.825
656.7	0	51.697	51.775
656.8	0	51.634	51.725

656.9	0	51.55	51.675
657	0	51.487	51.625
657.1	0	51.424	51.575
657.2	0	51.341	51.525
657.3	0	51.278	51.475
657.4	0	51.215	51.425
657.5	0	51.152	51.375
657.6	0	51.089	51.325
657.7	0	51.026	51.275
657.8	0	50.943	51.225
657.9	0	50.859	51.175
658	0	50.796	51.125
658.1	0	50.712	51.095
658.2	0	50.628	51.085
658.3	0	50.566	51.075
658.4	0	50.524	51.065
658.5	0	50.482	51.055
658.6	0	50.461	51.045
658.7	0	50.461	51.035
658.8	0	50.461	51.025
658.9	0	50.461	51.015
659	0	50.461	51.005
659.1	0	50.461	51
659.2	0	50.461	51
659.3	0	50.482	51
659.4	0	50.503	51
659.5	0	50.524	51
659.6	0	50.545	51
659.7	0	50.566	51
659.8	0	50.587	51
659.9	0	50.607	51
660	0	50.649	51
660.1	0	50.67	51.005
660.2	0	50.712	51.015
660.3	0	50.754	51.025
660.4	0	50.796	51.035
660.5	0	50.859	51.045
660.6	0	50.901	51.055
660.7	0	50.943	51.065
660.8	0	50.964	51.075
660.9	0	51.005	51.085
661	0	51.047	51.095
661.1	0	51.068	51.115
661.2	0	51.089	51.145
661.3	0	51.11	51.175



661.4	0	51.11	51.205
661.5	0	51.131	51.235
661.6	0	51.152	51.265
661.7	0	51.152	51.295
661.8	0	51.152	51.325
661.9	0	51.173	51.355
662	0	51.194	51.385
662.1	0	51.194	51.415
662.2	0	51.215	51.445
662.3	0	51.215	51.475
662.4	0	51.236	51.505
662.5	0	51.257	51.535
662.6	0	51.299	51.565
662.7	0	51.299	51.595
662.8	0	51.383	51.625
662.9	0	51.424	51.655
663	0	51.466	51.685
663.1	0	51.466	51.715
663.2	0	51.508	51.745
663.3	0	51.592	51.775
663.4	0	51.634	51.805
663.5	0	51.676	51.835
663.6	0	51.676	51.865
663.7	0	51.78	51.895
663.8	0	51.822	51.925
663.9	0	51.864	51.955
664	0	51.864	51.985
664.1	0	51.906	52.01
664.2	0	51.969	52.03
664.3	0	51.99	52.05
664.4	0	51.99	52.07
664.5	0	52.011	52.09
664.6	0	52.032	52.11
664.7	0	52.074	52.13
664.8	0	52.074	52.15
664.9	0	52.095	52.17
665	0	52.095	52.19
665.1	0	52.095	52.215
665.2	0	52.095	52.245
665.3	0	52.095	52.275
665.4	0	52.095	52.305
665.5	0	52.095	52.335
665.6	0	52.095	52.365
665.7	0	52.095	52.395
665.8	0	52.074	52.425

665.9	0	52.074	52.455
666	0	52.074	52.485
666.1	0	52.074	52.515
666.2	0	52.053	52.545
666.3	0	52.032	52.575
666.4	0	51.99	52.605
666.5	0	51.948	52.635
666.6	0	51.948	52.665
666.7	0	51.927	52.695
666.8	0	51.927	52.725
666.9	0	51.885	52.755
667	0	51.885	52.785
667.1	0	51.885	52.795
667.2	0	51.885	52.785
667.3	0	51.906	52.775
667.4	0	51.906	52.765
667.5	0	51.927	52.755
667.6	0	51.948	52.745
667.7	0	51.969	52.735
667.8	0	51.99	52.725
667.9	0	52.011	52.715
668	0	52.032	52.705
668.1	0	52.032	52.695
668.2	0	52.053	52.685
668.3	0	52.074	52.675
668.4	0	52.095	52.665
668.5	0	52.116	52.655
668.6	0	52.137	52.645
668.7	0	52.158	52.635
668.8	0	52.158	52.625
668.9	0	52.178	52.615
669	0	52.199	52.605
669.1	0	52.22	52.585
669.2	0	52.241	52.555
669.3	0	52.241	52.525
669.4	0	52.262	52.495
669.5	0	52.283	52.465
669.6	0	52.304	52.435
669.7	0	52.304	52.405
669.8	0	52.325	52.375
669.9	0	52.325	52.345
670	0	52.346	52.315
670.1	0	52.346	52.3
670.2	0	52.367	52.3
670.3	0	52.367	52.3

670.4	0	52.388	52.3
670.5	0	52.388	52.3
670.6	0	52.388	52.3
670.7	0	52.409	52.3
670.8	0	52.409	52.3
670.9	0	52.43	52.3
671	0	52.43	52.3
671.1	0	52.43	52.305
671.2	0	52.43	52.315
671.3	0	52.451	52.325
671.4	0	52.43	52.335
671.5	0	52.43	52.345
671.6	0	52.43	52.355
671.7	0	52.43	52.365
671.8	0	52.43	52.375
671.9	0	52.409	52.385
672	0	52.388	52.395
672.1	0	52.388	52.405
672.2	0	52.388	52.415
672.3	0	52.388	52.425
672.4	0	52.388	52.435
672.5	0	52.388	52.445
672.6	0	52.409	52.455
672.7	0	52.409	52.465
672.8	0	52.409	52.475
672.9	0	52.43	52.485
673	0	52.43	52.495
673.1	0	52.43	52.51
673.2	0	52.43	52.53
673.3	0	52.43	52.55
673.4	0	52.451	52.57
673.5	0	52.451	52.59
673.6	0	52.451	52.61
673.7	0	52.472	52.63
673.8	0	52.472	52.65
673.9	0	52.472	52.67
674	0	52.472	52.69
674.1	0	52.472	52.7
674.2	0	52.472	52.7
674.3	0	52.472	52.7
674.4	0	52.472	52.7
674.5	0	52.472	52.7
674.6	0	52.472	52.7
674.7	0	52.472	52.7
674.8	0	52.472	52.7

674.9	0	52.472	52.7
675	0	52.472	52.7
675.1	0	52.451	52.685
675.2	0	52.451	52.655
675.3	0	52.409	52.625
675.4	0	52.409	52.595
675.5	0	52.388	52.565
675.6	0	52.388	52.535
675.7	0	52.346	52.505
675.8	0	52.304	52.475
675.9	0	52.262	52.445
676	0	52.178	52.415
676.1	0	52.116	52.385
676.2	0	52.032	52.355
676.3	0	51.969	52.325
676.4	0	51.906	52.295
676.5	0	51.843	52.265
676.6	0	51.78	52.235
676.7	0	51.718	52.205
676.8	0	51.655	52.175
676.9	0	51.613	52.145
677	0	51.55	52.115
677.1	0	51.487	52.08
677.2	0	51.424	52.04
677.3	0	51.362	52
677.4	0	51.299	51.96
677.5	0	51.257	51.92
677.6	0	51.236	51.88
677.7	0	51.194	51.84
677.8	0	51.173	51.8
677.9	0	51.152	51.76
678	0	51.131	51.72
678.1	0	51.11	51.67
678.2	0	51.089	51.61
678.3	0	51.068	51.55
678.4	0	51.047	51.49
678.5	0	51.026	51.43
678.6	0	50.985	51.37
678.7	0	50.943	51.31
678.8	0	50.901	51.25
678.9	0	50.859	51.19
679	0	50.796	51.13
679.1	0	50.733	51.07
679.2	0	50.691	51.01
679.3	0	50.628	50.95

679.4	0	50.566	50.89
679.5	0	50.503	50.83
679.6	0	50.461	50.77
679.7	0	50.461	50.71
679.8	0	50.377	50.65
679.9	0	50.335	50.59
680	0	50.293	50.53
680.1	0	50.272	50.48
680.2	0	50.23	50.44
680.3	0	50.209	50.4
680.4	0	50.189	50.36
680.5	0	50.168	50.32
680.6	0	50.147	50.28
680.7	0	50.126	50.24
680.8	0	50.105	50.2
680.9	0	50.084	50.16
681	0	50.084	50.12
681.1	0	50.042	50.085
681.2	0	50.021	50.055
681.3	0	50.021	50.025
681.4	0	50.021	49.995
681.5	0	49.979	49.965
681.6	0	49.958	49.935
681.7	0	49.937	49.905
681.8	0	49.937	49.875
681.9	0	49.937	49.845
682	0	49.916	49.815
682.1	0	49.895	49.795
682.2	0	49.895	49.785
682.3	0	49.895	49.775
682.4	0	49.874	49.765
682.5	0	49.853	49.755
682.6	0	49.853	49.745
682.7	0	49.853	49.735
682.8	0	49.853	49.725
682.9	0	49.832	49.715
683	0	49.811	49.705
683.1	0	49.811	49.695
683.2	0	49.811	49.685
683.3	0	49.811	49.675
683.4	0	49.791	49.665
683.5	0	49.791	49.655
683.6	0	49.791	49.645
683.7	0	49.77	49.635
683.8	0	49.77	49.625

683.9	0	49.77	49.615
684	0	49.77	49.605
684.1	0	49.77	49.595
684.2	0	49.77	49.585
684.3	0	49.77	49.575
684.4	0	49.749	49.565
684.5	0	49.749	49.555
684.6	0	49.749	49.545
684.7	0	49.749	49.535
684.8	0	49.728	49.525
684.9	0	49.728	49.515
685	0	49.728	49.505
685.1	0	49.728	49.5
685.2	0	49.707	49.5
685.3	0	49.707	49.5
685.4	0	49.707	49.5
685.5	0	49.707	49.5
685.6	0	49.707	49.5
685.7	0	49.707	49.5
685.8	0	49.707	49.5
685.9	0	49.686	49.5
686	0	49.686	49.5
686.1	0	49.686	49.51
686.2	0	49.686	49.53
686.3	0	49.686	49.55
686.4	0	49.686	49.57
686.5	0	49.686	49.59
686.6	0	49.686	49.61
686.7	0	49.686	49.63
686.8	0	49.707	49.65
686.9	0	49.686	49.67
687	0	49.707	49.69
687.1	0	49.686	49.715
687.2	0	49.707	49.745
687.3	0	49.707	49.775
687.4	0	49.707	49.805
687.5	0	49.707	49.835
687.6	0	49.707	49.865
687.7	0	49.707	49.895
687.8	0	49.707	49.925
687.9	0	49.728	49.955
688	0	49.749	49.985
688.1	0	49.77	50.01
688.2	0	49.791	50.03
688.3	0	49.832	50.05

688.4	0	49.853	50.07
688.5	0	49.895	50.09
688.6	0	49.937	50.11
688.7	0	49.979	50.13
688.8	0	50.021	50.15
688.9	0	50.084	50.17
689	0	50.126	50.19
689.1	0	50.189	50.22
689.2	0	50.23	50.26
689.3	0	50.272	50.3
689.4	0	50.335	50.34
689.5	0	50.377	50.38
689.6	0	50.419	50.42
689.7	0	50.461	50.46
689.8	0	50.524	50.5
689.9	0	50.566	50.54
690	0	50.607	50.58
690.1	0	50.649	50.625
690.2	0	50.691	50.675
690.3	0	50.733	50.725
690.4	0	50.796	50.775
690.5	0	50.838	50.825
690.6	0	50.88	50.875
690.7	0	50.88	50.925
690.8	0	50.964	50.975
690.9	0	51.026	51.025
691	0	51.068	51.075
691.1	0	51.068	51.125
691.2	0	51.11	51.175
691.3	0	51.215	51.225
691.4	0	51.257	51.275
691.5	0	51.299	51.325
691.6	0	51.299	51.375
691.7	0	51.341	51.425
691.8	0	51.445	51.475
691.9	0	51.487	51.525
692	0	51.487	51.575
692.1	0	51.529	51.615
692.2	0	51.613	51.645
692.3	0	51.634	51.675
692.4	0	51.676	51.705
692.5	0	51.676	51.735
692.6	0	51.697	51.765
692.7	0	51.739	51.795
692.8	0	51.801	51.825

692.9	0	51.801	51.855
693	0	51.843	51.885
693.1	0	51.885	51.905
693.2	0	51.969	51.915
693.3	0	52.011	51.925
693.4	0	52.011	51.935
693.5	0	52.032	51.945
693.6	0	52.074	51.955
693.7	0	52.137	51.965
693.8	0	52.137	51.975
693.9	0	52.158	51.985
694	0	52.178	51.995
694.1	0	52.199	52.005
694.2	0	52.22	52.015
694.3	0	52.241	52.025
694.4	0	52.241	52.035
694.5	0	52.262	52.045
694.6	0	52.283	52.055
694.7	0	52.283	52.065
694.8	0	52.283	52.075
694.9	0	52.304	52.085
695	0	52.304	52.095
695.1	0	52.346	52.115
695.2	0	52.367	52.145
695.3	0	52.409	52.175
695.4	0	52.43	52.205
695.5	0	52.472	52.235
695.6	0	52.493	52.265
695.7	0	52.535	52.295
695.8	0	52.576	52.325
695.9	0	52.618	52.355
696	0	52.66	52.385
696.1	0	52.702	52.425
696.2	0	52.744	52.475
696.3	0	52.786	52.525
696.4	0	52.828	52.575
696.5	0	52.891	52.625
696.6	0	52.933	52.675
696.7	0	52.974	52.725
696.8	0	53.016	52.775
696.9	0	53.058	52.825
697	0	53.1	52.875
697.1	0	53.142	52.92
697.2	0	53.184	52.96
697.3	0	53.226	53



697.4	0	53.268	53.04
697.5	0	53.289	53.08
697.6	0	53.331	53.12
697.7	0	53.372	53.16
697.8	0	53.414	53.2
697.9	0	53.456	53.24
698	0	53.498	53.28
698.1	0	53.54	53.32
698.2	0	53.582	53.36
698.3	0	53.624	53.4
698.4	0	53.666	53.44
698.5	0	53.687	53.48
698.6	0	53.729	53.52
698.7	0	53.77	53.56
698.8	0	53.791	53.6
698.9	0	53.833	53.64
699	0	53.854	53.68
699.1	0	53.896	53.725
699.2	0	53.917	53.775
699.3	0	53.938	53.825
699.4	0	53.959	53.875
699.5	0	53.959	53.925
699.6	0	53.98	53.975
699.7	0	54.001	54.025
699.8	0	54.022	54.075
699.9	0	54.022	54.125
700	0	54.043	54.175
700.1	0	54.064	54.215
700.2	0	54.085	54.245
700.3	0	54.085	54.275
700.4	0	54.085	54.305
700.5	0	54.106	54.335
700.6	0	54.127	54.365
700.7	0	54.147	54.395
700.8	0	54.147	54.425
700.9	0	54.147	54.455
701	0	54.189	54.485
701.1	0	54.189	54.515
701.2	0	54.21	54.545
701.3	0	54.21	54.575
701.4	0	54.231	54.605
701.5	0	54.252	54.635
701.6	0	54.252	54.665
701.7	0	54.252	54.695
701.8	0	54.273	54.725

701.9	0	54.294	54.755
702	0	54.315	54.785
702.1	0	54.315	54.81
702.2	0	54.315	54.83
702.3	0	54.357	54.85
702.4	0	54.399	54.87
702.5	0	54.441	54.89
702.6	0	54.441	54.91
702.7	0	54.483	54.93
702.8	0	54.504	54.95
702.9	0	54.587	54.97
703	0	54.587	54.99
703.1	0	54.608	55.025
703.2	0	54.65	55.075
703.3	0	54.692	55.125
703.4	0	54.797	55.175
703.5	0	54.797	55.225
703.6	0	54.839	55.275
703.7	0	54.881	55.325
703.8	0	54.923	55.375
703.9	0	54.985	55.425
704	0	55.027	55.475
704.1	0	55.069	55.52
704.2	0	55.132	55.56
704.3	0	55.258	55.6
704.4	0	55.258	55.64
704.5	0	55.3	55.68
704.6	0	55.362	55.72
704.7	0	55.425	55.76
704.8	0	55.488	55.8
704.9	0	55.551	55.84
705	0	55.593	55.88
705.1	0	55.635	55.91
705.2	0	55.677	55.93
705.3	0	55.698	55.95
705.4	0	55.739	55.97
705.5	0	55.76	55.99
705.6	0	55.802	56.01
705.7	0	55.802	56.03
705.8	0	55.865	56.05
705.9	0	55.886	56.07
706	0	55.907	56.09
706.1	0	55.949	56.11
706.2	0	55.97	56.13
706.3	0	56.012	56.15

706.4	0	56.054	56.17
706.5	0	56.075	56.19
706.6	0	56.116	56.21
706.7	0	56.158	56.23
706.8	0	56.2	56.25
706.9	0	56.242	56.27
707	0	56.263	56.29
707.1	0	56.305	56.305
707.2	0	56.347	56.315
707.3	0	56.368	56.325
707.4	0	56.41	56.335
707.5	0	56.431	56.345
707.6	0	56.473	56.355
707.7	0	56.494	56.365
707.8	0	56.514	56.375
707.9	0	56.556	56.385
708	0	56.577	56.395
708.1	0	56.619	56.405
708.2	0	56.64	56.415
708.3	0	56.682	56.425
708.4	0	56.703	56.435
708.5	0	56.745	56.445
708.6	0	56.766	56.455
708.7	0	56.808	56.465
708.8	0	56.829	56.475
708.9	0	56.85	56.485
709	0	56.871	56.495
709.1	0	56.912	56.51
709.2	0	56.912	56.53
709.3	0	56.954	56.55
709.4	0	56.975	56.57
709.5	0	56.996	56.59
709.6	0	56.996	56.61
709.7	0	57.038	56.63
709.8	0	57.08	56.65
709.9	0	57.101	56.67
710	0	57.143	56.69
710.1	0	57.143	56.71
710.2	0	57.227	56.73
710.3	0	57.269	56.75
710.4	0	57.29	56.77
710.5	0	57.29	56.79
710.6	0	57.331	56.81
710.7	0	57.373	56.83
710.8	0	57.394	56.85

710.9	0	57.394	56.87
711	0	57.415	56.89
711.1	0	57.415	56.905
711.2	0	57.436	56.915
711.3	0	57.436	56.925
711.4	0	57.436	56.935
711.5	0	57.436	56.945
711.6	0	57.457	56.955
711.7	0	57.478	56.965
711.8	0	57.478	56.975
711.9	0	57.478	56.985
712	0	57.499	56.995
712.1	0	57.52	57.015
712.2	0	57.541	57.045
712.3	0	57.541	57.075
712.4	0	57.583	57.105
712.5	0	57.604	57.135
712.6	0	57.687	57.165
712.7	0	57.687	57.195
712.8	0	57.708	57.225
712.9	0	57.75	57.255
713	0	57.834	57.285
713.1	0	57.834	57.32
713.2	0	57.876	57.36
713.3	0	57.897	57.4
713.4	0	57.939	57.44
713.5	0	57.981	57.48
713.6	0	58.023	57.52
713.7	0	58.044	57.56
713.8	0	58.085	57.6
713.9	0	58.106	57.64
714	0	58.127	57.68
714.1	0	58.148	57.725
714.2	0	58.19	57.775
714.3	0	58.211	57.825
714.4	0	58.232	57.875
714.5	0	58.274	57.925
714.6	0	58.295	57.975
714.7	0	58.316	58.025
714.8	0	58.337	58.075
714.9	0	58.379	58.125
715	0	58.4	58.175
715.1	0	58.442	58.23
715.2	0	58.483	58.29
715.3	0	58.525	58.35

715.4	0	58.546	58.41
715.5	0	58.588	58.47
715.6	0	58.63	58.53
715.7	0	58.672	58.59
715.8	0	58.714	58.65
715.9	0	58.756	58.71
716	0	58.798	58.77
716.1	0	58.84	58.815
716.2	0	58.881	58.845
716.3	0	58.902	58.875
716.4	0	58.944	58.905
716.5	0	58.965	58.935
716.6	0	58.986	58.965
716.7	0	59.007	58.995
716.8	0	59.028	59.025
716.9	0	59.028	59.055
717	0	59.049	59.085
717.1	0	59.049	59.105
717.2	0	59.07	59.115
717.3	0	59.07	59.125
717.4	0	59.091	59.135
717.5	0	59.112	59.145
717.6	0	59.112	59.155
717.7	0	59.133	59.165
717.8	0	59.133	59.175
717.9	0	59.154	59.185
718	0	59.154	59.195
718.1	0	59.175	59.195
718.2	0	59.175	59.185
718.3	0	59.196	59.175
718.4	0	59.196	59.165
718.5	0	59.217	59.155
718.6	0	59.217	59.145
718.7	0	59.217	59.135
718.8	0	59.217	59.125
718.9	0	59.238	59.115
719	0	59.258	59.105
719.1	0	59.258	59.085
719.2	0	59.258	59.055
719.3	0	59.258	59.025
719.4	0	59.258	58.995
719.5	0	59.258	58.965
719.6	0	59.258	58.935
719.7	0	59.258	58.905
719.8	0	59.217	58.875

719.9	0	59.196	58.845
720	0	59.154	58.815
720.1	0	59.154	58.785
720.2	0	59.133	58.755
720.3	0	59.049	58.725
720.4	0	59.028	58.695
720.5	0	59.028	58.665
720.6	0	58.965	58.635
720.7	0	58.819	58.605
720.8	0	58.735	58.575
720.9	0	58.735	58.545
721	0	58.651	58.515
721.1	0	58.546	58.48
721.2	0	58.4	58.44
721.3	0	58.316	58.4
721.4	0	58.316	58.36
721.5	0	58.274	58.32
721.6	0	58.211	58.28
721.7	0	58.106	58.24
721.8	0	58.106	58.2
721.9	0	58.065	58.16
722	0	58.044	58.12
722.1	0	57.981	58.08
722.2	0	57.981	58.04
722.3	0	57.939	58
722.4	0	57.918	57.96
722.5	0	57.876	57.92
722.6	0	57.834	57.88
722.7	0	57.834	57.84
722.8	0	57.792	57.8
722.9	0	57.771	57.76
723	0	57.729	57.72
723.1	0	57.708	57.68
723.2	0	57.667	57.64
723.3	0	57.646	57.6
723.4	0	57.604	57.56
723.5	0	57.583	57.52
723.6	0	57.541	57.48
723.7	0	57.52	57.44
723.8	0	57.478	57.4
723.9	0	57.457	57.36
724	0	57.436	57.32
724.1	0	57.415	57.29
724.2	0	57.394	57.27
724.3	0	57.394	57.25

724.4	0	57.373	57.23
724.5	0	57.352	57.21
724.6	0	57.331	57.19
724.7	0	57.31	57.17
724.8	0	57.269	57.15
724.9	0	57.248	57.13
725	0	57.206	57.11
725.1	0	57.164	57.085
725.2	0	57.122	57.055
725.3	0	57.08	57.025
725.4	0	57.059	56.995
725.5	0	57.017	56.965
725.6	0	56.975	56.935
725.7	0	56.954	56.905
725.8	0	56.912	56.873
725.9	0	56.892	56.845
726	0	56.85	56.815
726.1	0	56.829	56.785
726.2	0	56.787	56.755
726.3	0	56.766	56.725
726.4	0	56.745	56.695
726.5	0	56.724	56.665
726.6	0	56.703	56.635
726.7	0	56.682	56.605
726.8	0	56.661	56.575
726.9	0	56.64	56.545
727	0	56.64	56.515
727.1	0	56.619	56.485
727.2	0	56.577	56.455
727.3	0	56.556	56.425
727.4	0	56.535	56.395
727.5	0	56.494	56.365
727.6	0	56.473	56.335
727.7	0	56.41	56.305
727.8	0	56.347	56.275
727.9	0	56.263	56.245
728	0	56.2	56.215
728.1	0	56.116	56.165
728.2	0	56.054	56.095
728.3	0	56.054	56.025
728.4	0	55.886	55.955
728.5	0	55.823	55.885
728.6	0	55.739	55.815
728.7	0	55.739	55.745
728.8	0	55.614	55.675

728.9	0	55.551	55.605
729	0	55.488	55.535
729.1	0	55.425	55.455
729.2	0	55.425	55.365
729.3	0	55.3	55.275
729.4	0	55.237	55.185
729.5	0	55.153	55.095
729.6	0	55.153	55.005
729.7	0	55.111	54.915
729.8	0	54.985	54.825
729.9	0	54.923	54.735
730	0	54.923	54.645
730.1	0	54.86	54.575
730.2	0	54.755	54.525
730.3	0	54.713	54.475
730.4	0	54.65	54.425
730.5	0	54.65	54.375
730.6	0	54.608	54.325
730.7	0	54.504	54.275
730.8	0	54.462	54.225
730.9	0	54.462	54.175
731	0	54.399	54.125
731.1	0	54.357	54.08
731.2	0	54.252	54.04
731.3	0	54.252	54
731.4	0	54.189	53.96
731.5	0	54.127	53.92
731.6	0	54.064	53.88
731.7	0	53.938	53.84
731.8	0	53.938	53.8
731.9	0	53.875	53.76
732	0	53.812	53.72
732.1	0	53.729	53.675
732.2	0	53.687	53.625
732.3	0	53.645	53.575
732.4	0	53.624	53.525
732.5	0	53.582	53.475
732.6	0	53.561	53.425
732.7	0	53.54	53.375
732.8	0	53.519	53.325
732.9	0	53.498	53.275
733	0	53.477	53.225
733.1	0	53.456	53.185
733.2	0	53.414	53.155
733.3	0	53.372	53.125



733.4	0	53.352	53.095
733.5	0	53.289	53.065
733.6	0	53.247	53.035
733.7	0	53.205	53.005
733.8	0	53.163	52.975
733.9	0	53.121	52.945
734	0	53.079	52.915
734.1	0	53.016	52.88
734.2	0	52.974	52.84
734.3	0	52.933	52.8
734.4	0	52.891	52.76
734.5	0	52.849	52.72
734.6	0	52.786	52.68
734.7	0	52.744	52.64
734.8	0	52.681	52.6
734.9	0	52.618	52.56
735	0	52.535	52.52
735.1	0	52.472	52.475
735.2	0	52.409	52.425
735.3	0	52.346	52.375
735.4	0	52.262	52.325
735.5	0	52.199	52.275
735.6	0	52.137	52.225
735.7	0	52.074	52.175
735.8	0	52.011	52.125
735.9	0	51.948	52.075
736	0	51.885	52.025
736.1	0	51.843	51.965
736.2	0	51.78	51.895
736.3	0	51.718	51.825
736.4	0	51.655	51.755
736.5	0	51.592	51.685
736.6	0	51.529	51.615
736.7	0	51.466	51.545
736.8	0	51.403	51.475
736.9	0	51.32	51.405
737	0	51.257	51.335
737.1	0	51.173	51.26
737.2	0	51.11	51.18
737.3	0	51.047	51.1
737.4	0	50.964	51.02
737.5	0	50.901	50.94
737.6	0	50.838	50.86
737.7	0	50.754	50.78
737.8	0	50.691	50.7

737.9	0	50.628	50.62
738	0	50.628	50.54
738.1	0	50.482	50.45
738.2	0	50.419	50.35
738.3	0	50.335	50.25
738.4	0	50.335	50.15
738.5	0	50.272	50.05
738.6	0	50.126	49.95
738.7	0	50.063	49.85
738.8	0	50	49.75
738.9	0	50	49.65
739	0	49.853	49.55
739.1	0	49.791	49.45
739.2	0	49.728	49.35
739.3	0	49.728	49.25
739.4	0	49.665	49.15
739.5	0	49.518	49.05
739.6	0	49.455	48.95
739.7	0	49.393	48.85
739.8	0	49.393	48.75
739.9	0	49.33	48.65
740	0	49.183	48.55
740.1	0	49.099	48.455
740.2	0	49.099	48.365
740.3	0	49.016	48.275
740.4	0	48.932	48.185
740.5	0	48.785	48.095
740.6	0	48.701	48.005
740.7	0	48.701	47.915
740.8	0	48.618	47.825
740.9	0	48.534	47.735
741	0	48.387	47.645
741.1	0	48.387	47.56
741.2	0	48.303	47.48
741.3	0	48.24	47.4
741.4	0	48.157	47.32
741.5	0	48.073	47.24
741.6	0	47.989	47.16
741.7	0	47.926	47.08
741.8	0	47.842	47
741.9	0	47.675	46.92
742	0	47.675	46.84
742.1	0	47.612	46.74
742.2	0	47.528	46.62
742.3	0	47.445	46.5

742.4	0	47.382	46.38
742.5	0	47.298	46.26
742.6	0	47.214	46.14
742.7	0	47.047	46.02
742.8	0	46.837	45.9
742.9	0	46.565	45.78
743	0	46.292	45.66
743.1	0	46.02	45.53
743.2	0	45.748	45.39
743.3	0	45.538	45.25
743.4	0	45.371	45.11
743.5	0	45.224	44.97
743.6	0	45.078	44.83
743.7	0	44.931	44.69
743.8	0	44.763	44.55
743.9	0	44.596	44.41
744	0	44.386	44.27
744.1	0	44.177	44.115
744.2	0	43.946	43.945
744.3	0	43.716	43.775
744.4	0	43.465	43.605
744.5	0	43.234	43.435
744.6	0	42.983	43.265
744.7	0	42.983	43.095
744.8	0	42.48	42.925
744.9	0	42.25	42.755
745	0	41.998	42.585
745.1	0	41.747	42.335
745.2	0	41.391	42.005
745.3	0	40.993	41.675
745.4	0	40.595	41.345
745.5	0	40.197	41.015
745.6	0	39.799	40.685
745.7	0	39.422	40.355
745.8	0	39.045	40.025
745.9	0	38.668	39.695
746	0	38.27	39.365
746.1	0	37.851	39.035
746.2	0	37.432	38.705
746.3	0	37.034	38.375
746.4	0	36.657	38.045
746.5	0	36.301	37.715
746.6	0	35.924	37.385
746.7	0	35.568	37.055
746.8	0	35.191	36.725

746.9	0	34.814	36.395
747	0	34.437	36.065
747.1	0	34.101	35.735
747.2	0	34.101	35.405
747.3	0	33.41	35.075
747.4	0	33.096	34.745
747.5	0	32.761	34.415
747.6	0	32.761	34.085
747.7	0	32.028	33.755
747.8	0	31.651	33.425
747.9	0	31.274	33.095
748	0	30.876	32.765
748.1	0	30.876	32.435
748.2	0	30.163	32.105
748.3	0	29.828	31.775
748.4	0	29.493	31.445
748.5	0	29.493	31.115
748.6	0	29.2	30.785
748.7	0	28.592	30.455
748.8	0	28.32	30.125
748.9	0	28.32	29.795
749	0	28.09	29.465
749.1	0	27.901	29.175
749.2	0	27.587	28.925
749.3	0	27.419	28.675
749.4	0	27.419	28.425
749.5	0	27.273	28.175
749.6	0	27.147	27.925
749.7	0	26.875	27.675
749.8	0	26.875	27.425
749.9	0	26.728	27.175
750	0	26.602	26.925
750.1	0	26.456	26.685
750.2	0	26.121	26.455
750.3	0	26.121	26.225
750.4	0	25.953	25.995
750.5	0	25.765	25.765
750.6	0	25.388	25.535
750.7	0	25.388	25.305
750.8	0	25.199	25.075
750.9	0	25.01	24.845
751	0	24.801	24.615
751.1	0	24.612	24.35
751.2	0	24.424	24.05
751.3	0	24.215	23.75

751.4	0	24.026	23.45
751.5	0	23.837	23.15
751.6	0	23.628	22.85
751.7	0	23.439	22.55
751.8	0	23.251	22.25
751.9	0	23.041	21.95
752	0	22.832	21.65
752.1	0	22.623	21.4
752.2	0	22.434	21.2
752.3	0	22.204	21
752.4	0	21.868	20.8
752.5	0	21.512	20.6
752.6	0	21.114	20.4
752.7	0	20.716	20.2
752.8	0	20.297	20
752.9	0	19.879	19.8
753	0	19.543	19.6
753.1	0	19.229	19.395
753.2	0	18.957	19.185
753.3	0	18.705	18.975
753.4	0	18.517	18.765
753.5	0	18.328	18.555
753.6	0	18.161	18.345
753.7	0	17.993	18.135
753.8	0	17.847	17.925
753.9	0	17.679	17.715
754	0	17.532	17.505
754.1	0	17.365	17.285
754.2	0	17.197	17.055
754.3	0	17.051	16.825
754.4	0	16.883	16.595
754.5	0	16.736	16.365
754.6	0	16.569	16.135
754.7	0	16.401	15.905
754.8	0	16.234	15.675
754.9	0	16.087	15.445
755	0	15.899	15.215
755.1	0	15.668	14.965
755.2	0	15.396	14.695
755.3	0	15.103	14.425
755.4	0	14.767	14.155
755.5	0	14.349	13.885
755.6	0	13.846	13.615
755.7	0	13.343	13.345
755.8	0	12.882	13.075

755.9	0	12.421	12.805
756	0	11.982	12.535
756.1	0	11.563	12.265
756.2	0	11.144	11.995
756.3	0	10.746	11.725
756.4	0	10.369	11.455
756.5	0	9.992	11.185
756.6	0	9.656	10.915
756.7	0	9.321	10.645
756.8	0	9.028	10.375
756.9	0	9.028	10.105
757	0	8.525	9.835
757.1	0	8.295	9.565
757.2	0	8.065	9.295
757.3	0	7.834	9.025
757.4	0	7.834	8.755
757.5	0	7.394	8.485
757.6	0	7.394	8.215
757.7	0	6.975	7.945
757.8	0	6.975	7.675
757.9	0	6.745	7.405
758	0	6.389	7.135
758.1	0	6.221	6.9
758.2	0	6.221	6.7
758.3	0	6.075	6.5
758.4	0	5.76	6.3
758.5	0	5.614	6.1
758.6	0	5.467	5.9
758.7	0	5.467	5.7
758.8	0	5.32	5.5
758.9	0	5.048	5.3
759	0	4.902	5.1
759.1	0	4.902	4.915
759.2	0	4.776	4.745
759.3	0	4.629	4.575
759.4	0	4.315	4.405
759.5	0	4.168	4.235
759.6	0	4.168	4.065
759.7	0	4.001	3.895
759.8	0	3.854	3.725
759.9	0	3.519	3.555
760	0	3.519	3.385
760.1	0	3.372	3.235
760.2	0	3.205	3.105
760.3	0	2.953	2.975

760.4	0	2.283	2.845
760.5	0	2.283	2.715
760.6	0	1.927	2.585
760.7	0	1.571	2.455
760.8	0	1.299	2.325
760.9	0	1.11	2.195
761	0	0.901	2.065
761.1	0	0.733	1.935
761.2	0	0.545	1.805
761.3	0	0.377	1.675
761.4	0	0.209	1.545
761.5	0	0.105	1.415
761.6	0	0.126	1.285
761.7	0	0.105	1.155
761.8	0	0.063	1.025
761.9	0	0.063	0.895
762	0	0.084	0.765
762.1	0	0.042	0.665
762.2	0	0.021	0.595
762.3	0	0.042	0.525
762.4	0	0.021	0.455
762.5	0	0.021	0.385
762.6	0	0.021	0.315
762.7	0	0	0.245
762.8	0	0	0.175
762.9	0	0	0.105
763	0	0	0.035
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779.4	5	0	0
779.5	5	0	0
779.6	5	0	0
779.7	5	0	0
779.8	5	0	0
779.9	5	0	0
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780.2	5	0	0
780.3	5	0	0
780.4	5	-0.021	0
780.5	5	0	0
780.6	5	0	0
780.7	5	0	0
780.8	5	0	0
780.9	5	0	0
781	5	0	0
781.1	5	0	0
781.2	5	0	0
781.3	5	0	0
781.4	5	0	0
781.5	5	0	0
781.6	5	0	0
781.7	5	0.021	0
781.8	5	0.021	0
781.9	5	0.021	0
782	5	0.021	0
782.1	5	0.042	0.1
782.2	5	0.042	0.3
782.3	5	0.042	0.5
782.4	5	0.042	0.7
782.5	5	0.063	0.9
782.6	5	0.084	1.1
782.7	5	0.126	1.3
782.8	5	0.251	1.5

782.9	5	0.44	1.7
783	5	0.628	1.9
783.1	5	0.817	2.145
783.2	5	1.005	2.435
783.3	5	1.194	2.725
783.4	5	1.403	3.015
783.5	5	1.634	3.305
783.6	5	1.634	3.595
783.7	5	2.178	3.885
783.8	5	2.43	4.175
783.9	5	2.723	4.465
784	5	2.995	4.755
784.1	5	3.268	5.06
784.2	5	3.561	5.38
784.3	5	3.917	5.7
784.4	5	4.315	6.02
784.5	5	4.713	6.34
784.6	5	5.153	6.66
784.7	5	5.593	6.98
784.8	5	6.033	7.3
784.9	5	6.033	7.62
785	5	6.912	7.94
785.1	5	7.373	8.26
785.2	5	7.834	8.58
785.3	5	7.834	8.9
785.4	5	8.672	9.22
785.5	5	9.07	9.54
785.6	5	9.426	9.86
785.7	5	9.761	10.18
785.8	5	9.761	10.5
785.9	5	10.348	10.82
786	5	10.62	11.14
786.1	5	10.871	11.46
786.2	5	10.871	11.78
786.3	5	11.102	12.1
786.4	5	11.584	12.42
786.5	5	11.835	12.74
786.6	5	11.835	13.06
786.7	5	12.086	13.38
786.8	5	12.359	13.7
786.9	5	12.882	14.02
787	5	13.155	14.34
787.1	5	13.155	14.64
787.2	5	13.49	14.92
787.3	5	13.804	15.2

787.4	5	14.495	15.48
787.5	5	14.495	15.76
787.6	5	14.851	16.04
787.7	5	15.207	16.32
787.8	5	15.584	16.6
787.9	5	16.255	16.88
788	5	16.255	17.16
788.1	5	16.569	17.415
788.2	5	16.883	17.645
788.3	5	17.197	17.875
788.4	5	17.742	18.105
788.5	5	17.742	18.335
788.6	5	17.972	18.565
788.7	5	18.203	18.795
788.8	5	18.601	19.025
788.9	5	18.601	19.255
789	5	18.768	19.485
789.1	5	18.957	19.71
789.2	5	19.124	19.93
789.3	5	19.292	20.15
789.4	5	19.481	20.37
789.5	5	19.669	20.59
789.6	5	19.879	20.81
789.7	5	20.088	21.03
789.8	5	20.318	21.25
789.9	5	20.549	21.47
790	5	20.779	21.69
790.1	5	21.01	21.91
790.2	5	21.261	22.13
790.3	5	21.491	22.35
790.4	5	21.722	22.57
790.5	5	21.973	22.79
790.6	5	22.204	23.01
790.7	5	22.455	23.23
790.8	5	22.685	23.45
790.9	5	22.937	23.67
791	5	23.188	23.89
791.1	5	23.439	24.09
791.2	5	23.67	24.27
791.3	5	23.9	24.45
791.4	5	24.131	24.63
791.5	5	24.34	24.81
791.6	5	24.571	24.99
791.7	5	24.78	25.17
791.8	5	24.99	25.35

791.9	5	25.199	25.53
792	5	25.408	25.71
792.1	5	25.576	25.865
792.2	5	25.744	25.995
792.3	5	25.911	26.125
792.4	5	26.037	26.255
792.5	5	26.184	26.385
792.6	5	26.309	26.515
792.7	5	26.414	26.645
792.8	5	26.54	26.775
792.9	5	26.665	26.905
793	5	26.791	27.035
793.1	5	26.896	27.145
793.2	5	27.021	27.235
793.3	5	27.147	27.325
793.4	5	27.273	27.415
793.5	5	27.377	27.505
793.6	5	27.482	27.595
793.7	5	27.587	27.685
793.8	5	27.692	27.775
793.9	5	27.817	27.865
794	5	27.817	27.955
794.1	5	28.027	28.05
794.2	5	28.132	28.15
794.3	5	28.236	28.25
794.4	5	28.341	28.35
794.5	5	28.467	28.45
794.6	5	28.592	28.55
794.7	5	28.697	28.65
794.8	5	28.823	28.75
794.9	5	28.823	28.85
795	5	29.032	28.95
795.1	5	29.116	29.05
795.2	5	29.221	29.15
795.3	5	29.221	29.25
795.4	5	29.305	29.35
795.5	5	29.472	29.45
795.6	5	29.556	29.55
795.7	5	29.64	29.65
795.8	5	29.64	29.75
795.9	5	29.724	29.85
796	5	29.87	29.95
796.1	5	29.954	30.035
796.2	5	29.954	30.105
796.3	5	30.038	30.175

796.4	5	30.184	30.245
796.5	5	30.268	30.315
796.6	5	30.268	30.385
796.7	5	30.268	30.455
796.8	5	30.415	30.525
796.9	5	30.561	30.595
797	5	30.624	30.665
797.1	5	30.624	30.74
797.2	5	30.708	30.82
797.3	5	30.771	30.9
797.4	5	30.917	30.98
797.5	5	30.917	31.06
797.6	5	30.98	31.14
797.7	5	31.064	31.22
797.8	5	31.211	31.3
797.9	5	31.211	31.38
798	5	31.274	31.46
798.1	5	31.336	31.535
798.2	5	31.42	31.605
798.3	5	31.504	31.675
798.4	5	31.567	31.745
798.5	5	31.651	31.815
798.6	5	31.734	31.885
798.7	5	31.881	31.955
798.8	5	31.881	32.025
798.9	5	31.965	32.095
799	5	32.049	32.165
799.1	5	32.132	32.235
799.2	5	32.216	32.305
799.3	5	32.3	32.375
799.4	5	32.363	32.445
799.5	5	32.447	32.515
799.6	5	32.53	32.585
799.7	5	32.614	32.655
799.8	5	32.698	32.725
799.9	5	32.782	32.795
800	5	32.886	32.865
800.1	5	32.97	32.93
800.2	5	33.054	32.99
800.3	5	33.138	33.05
800.4	5	33.222	33.11
800.5	5	33.305	33.17
800.6	5	33.368	33.23
800.7	5	33.431	33.29
800.8	5	33.494	33.35

800.9	5	33.536	33.41
801	5	33.599	33.47
801.1	5	33.641	33.53
801.2	5	33.682	33.59
801.3	5	33.724	33.65
801.4	5	33.745	33.71
801.5	5	33.787	33.77
801.6	5	33.829	33.83
801.7	5	33.85	33.89
801.8	5	33.892	33.95
801.9	5	33.913	34.01
802	5	33.955	34.07
802.1	5	33.976	34.125
802.2	5	33.997	34.175
802.3	5	34.039	34.225
802.4	5	34.059	34.275
802.5	5	34.08	34.325
802.6	5	34.101	34.375
802.7	5	34.101	34.425
802.8	5	34.122	34.475
802.9	5	34.122	34.525
803	5	34.122	34.575
803.1	5	34.122	34.615
803.2	5	34.122	34.645
803.3	5	34.101	34.675
803.4	5	34.101	34.705
803.5	5	34.101	34.735
803.6	5	34.101	34.765
803.7	5	34.101	34.795
803.8	5	34.122	34.825
803.9	5	34.143	34.855
804	5	34.143	34.885
804.1	5	34.206	34.91
804.2	5	34.248	34.93
804.3	5	34.29	34.95
804.4	5	34.332	34.97
804.5	5	34.332	34.99
804.6	5	34.457	35.01
804.7	5	34.499	35.03
804.8	5	34.562	35.05
804.9	5	34.562	35.07
805	5	34.688	35.09
805.1	5	34.751	35.13
805.2	5	34.814	35.19
805.3	5	34.814	35.25



805.4	5	34.897	35.31
805.5	5	35.002	35.37
805.6	5	35.065	35.43
805.7	5	35.065	35.49
805.8	5	35.128	35.55
805.9	5	35.191	35.61
806	5	35.295	35.67
806.1	5	35.337	35.71
806.2	5	35.337	35.73
806.3	5	35.4	35.75
806.4	5	35.484	35.77
806.5	5	35.526	35.79
806.6	5	35.526	35.81
806.7	5	35.568	35.83
806.8	5	35.61	35.85
806.9	5	35.651	35.87
807	5	35.693	35.89
807.1	5	35.693	35.895
807.2	5	35.714	35.885
807.3	5	35.714	35.875
807.4	5	35.735	35.865
807.5	5	35.735	35.855
807.6	5	35.735	35.845
807.7	5	35.735	35.835
807.8	5	35.735	35.825
807.9	5	35.714	35.814
808	5	35.714	35.805
808.1	5	35.693	35.775
808.2	5	35.631	35.725
808.3	5	35.589	35.675
808.4	5	35.526	35.625
808.5	5	35.484	35.575
808.6	5	35.421	35.525
808.7	5	35.379	35.475
808.8	5	35.337	35.425
808.9	5	35.316	35.375
809	5	35.295	35.325
809.1	5	35.274	35.28
809.2	5	35.253	35.24
809.3	5	35.233	35.2
809.4	5	35.212	35.16
809.5	5	35.212	35.12
809.6	5	35.212	35.08
809.7	5	35.17	35.04
809.8	5	35.149	35

809.9	5	35.128	34.96
810	5	35.128	34.92
810.1	5	35.107	34.88
810.2	5	35.086	34.84
810.3	5	35.065	34.8
810.4	5	35.065	34.76
810.5	5	35.044	34.72
810.6	5	35.023	34.68
810.7	5	35.002	34.64
810.8	5	34.981	34.6
810.9	5	34.981	34.56
811	5	34.981	34.52
811.1	5	34.981	34.505
811.2	5	35.002	34.515
811.3	5	35.023	34.525
811.4	5	35.044	34.535
811.5	5	35.065	34.545
811.6	5	35.107	34.555
811.7	5	35.128	34.565
811.8	5	35.149	34.575
811.9	5	35.17	34.585
812	5	35.191	34.595
812.1	5	35.212	34.61
812.2	5	35.233	34.63
812.3	5	35.253	34.65
812.4	5	35.274	34.67
812.5	5	35.274	34.69
812.6	5	35.274	34.71
812.7	5	35.274	34.73
812.8	5	35.274	34.75
812.9	5	35.253	34.77
813	5	35.253	34.79
813.1	5	35.233	34.815
813.2	5	35.233	34.845
813.3	5	35.233	34.875
813.4	5	35.212	34.905
813.5	5	35.212	34.935
813.6	5	35.212	34.965
813.7	5	35.212	34.995
813.8	5	35.212	35.025
813.9	5	35.212	35.055
814	5	35.212	35.085
814.1	5	35.212	35.13
814.2	5	35.233	35.19
814.3	5	35.253	35.25

814.4	5	35.274	35.31
814.5	5	35.274	35.37
814.6	5	35.295	35.43
814.7	5	35.337	35.49
814.8	5	35.379	35.55
814.9	5	35.4	35.61
815	5	35.4	35.67
815.1	5	35.442	35.72
815.2	5	35.484	35.76
815.3	5	35.505	35.8
815.4	5	35.505	35.84
815.5	5	35.547	35.88
815.6	5	35.61	35.92
815.7	5	35.651	35.96
815.8	5	35.651	36
815.9	5	35.693	36.04
816	5	35.735	36.08
816.1	5	35.819	36.105
816.2	5	35.819	36.115
816.3	5	35.882	36.125
816.4	5	35.924	36.135
816.5	5	35.987	36.145
816.6	5	36.091	36.155
816.7	5	36.091	36.165
816.8	5	36.133	36.175
816.9	5	36.175	36.185
817	5	36.28	36.195
817.1	5	36.28	36.215
817.2	5	36.322	36.245
817.3	5	36.343	36.275
817.4	5	36.385	36.305
817.5	5	36.426	36.335
817.6	5	36.426	36.365
817.7	5	36.447	36.395
817.8	5	36.468	36.425
817.9	5	36.468	36.455
818	5	36.489	36.485
818.1	5	36.51	36.51
818.2	5	36.531	36.53
818.3	5	36.531	36.55
818.4	5	36.573	36.57
818.5	5	36.573	36.59
818.6	5	36.615	36.61
818.7	5	36.636	36.63
818.8	5	36.657	36.65

818.9	5	36.678	36.67
819	5	36.678	36.69
819.1	5	36.72	36.71
819.2	5	36.72	36.73
819.3	5	36.741	36.75
819.4	5	36.762	36.77
819.5	5	36.783	36.79
819.6	5	36.824	36.81
819.7	5	36.845	36.83
819.8	5	36.866	36.85
819.9	5	36.887	36.87
820	5	36.908	36.89
820.1	5	36.908	36.905
820.2	5	36.929	36.915
820.3	5	36.95	36.925
820.4	5	36.95	36.935
820.5	5	36.971	36.945
820.6	5	36.971	36.955
820.7	5	36.992	36.965
820.8	5	36.992	36.975
820.9	5	36.992	36.985
821	5	36.992	36.995
821.1	5	36.992	37
821.2	5	36.971	37
821.3	5	36.971	37
821.4	5	36.95	37
821.5	5	36.95	37
821.6	5	36.929	37
821.7	5	36.908	37
821.8	5	36.887	37
821.9	5	36.866	37
822	5	36.845	37
822.1	5	36.824	37
822.2	5	36.804	37
822.3	5	36.783	37
822.4	5	36.762	37
822.5	5	36.741	37
822.6	5	36.741	37
822.7	5	36.72	37
822.8	5	36.699	37
822.9	5	36.699	37
823	5	36.699	37
823.1	5	36.678	37
823.2	5	36.678	37
823.3	5	36.678	37

823.4	5	36.699	37
823.5	5	36.72	37
823.6	5	36.741	37
823.7	5	36.741	37
823.8	5	36.741	37
823.9	5	36.783	37
824	5	36.804	37
824.1	5	36.845	37
824.2	5	36.845	37
824.3	5	36.866	37
824.4	5	36.908	37
824.5	5	36.95	37
824.6	5	36.95	37
824.7	5	36.971	37
824.8	5	37.013	37
824.9	5	37.076	37
825	5	37.118	37
825.1	5	37.118	37
825.2	5	37.16	37
825.3	5	37.181	37
825.4	5	37.264	37
825.5	5	37.264	37
825.6	5	37.285	37
825.7	5	37.327	37
825.8	5	37.348	37
825.9	5	37.369	37
826	5	37.369	37
826.1	5	37.39	37.005
826.2	5	37.39	37.015
826.3	5	37.39	37.025
826.4	5	37.411	37.035
826.5	5	37.411	37.045
826.6	5	37.411	37.055
826.7	5	37.411	37.065
826.8	5	37.411	37.075
826.9	5	37.432	37.085
827	5	37.432	37.095
827.1	5	37.432	37.11
827.2	5	37.453	37.13
827.3	5	37.474	37.15
827.4	5	37.495	37.17
827.5	5	37.537	37.19
827.6	5	37.558	37.21
827.7	5	37.62	37.23
827.8	5	37.662	37.25

827.9	5	37.704	37.27
828	5	37.746	37.29
828.1	5	37.788	37.325
828.2	5	37.851	37.375
828.3	5	37.893	37.425
828.4	5	37.956	37.475
828.5	5	38.018	37.525
828.6	5	38.081	37.575
828.7	5	38.144	37.625
828.8	5	38.228	37.675
828.9	5	38.291	37.725
829	5	38.354	37.775
829.1	5	38.437	37.84
829.2	5	38.5	37.92
829.3	5	38.563	38
829.4	5	38.647	38.08
829.5	5	38.71	38.16
829.6	5	38.793	38.24
829.7	5	38.856	38.32
829.8	5	38.94	38.4
829.9	5	39.003	38.48
830	5	39.066	38.56
830.1	5	39.15	38.635
830.2	5	39.212	38.705
830.3	5	39.275	38.775
830.4	5	39.338	38.845
830.5	5	39.401	38.915
830.6	5	39.464	38.985
830.7	5	39.506	39.055
830.8	5	39.569	39.125
830.9	5	39.61	39.195
831	5	39.652	39.265
831.1	5	39.694	39.335
831.2	5	39.736	39.405
831.3	5	39.778	39.475
831.4	5	39.841	39.545
831.5	5	39.883	39.615
831.6	5	39.925	39.685
831.7	5	39.966	39.755
831.8	5	40.008	39.825
831.9	5	40.05	39.895
832	5	40.113	39.965
832.1	5	40.113	40.035
832.2	5	40.218	40.105
832.3	5	40.26	40.175

832.4	5	40.323	40.245
832.5	5	40.323	40.315
832.6	5	40.385	40.385
832.7	5	40.511	40.455
832.8	5	40.574	40.525
832.9	5	40.637	40.595
833	5	40.637	40.665
833.1	5	40.762	40.735
833.2	5	40.825	40.805
833.3	5	40.888	40.875
833.4	5	40.888	40.945
833.5	5	40.951	41.015
833.6	5	41.077	41.085
833.7	5	41.14	41.155
833.8	5	41.202	41.225
833.9	5	41.202	41.295
834	5	41.286	41.365
834.1	5	41.412	41.44
834.2	5	41.475	41.52
834.3	5	41.475	41.6
834.4	5	41.538	41.68
834.5	5	41.6	41.76
834.6	5	41.726	41.84
834.7	5	41.789	41.92
834.8	5	41.789	42
834.9	5	41.852	42.08
835	5	41.935	42.16
835.1	5	42.061	42.235
835.2	5	42.061	42.305
835.3	5	42.124	42.375
835.4	5	42.187	42.445
835.5	5	42.271	42.515
835.6	5	42.396	42.585
835.7	5	42.396	42.655
835.8	5	42.48	42.725
835.9	5	42.543	42.795
836	5	42.69	42.865
836.1	5	42.69	42.93
836.2	5	42.773	42.99
836.3	5	42.836	43.05
836.4	5	42.92	43.11
836.5	5	43.004	43.17
836.6	5	43.088	43.23
836.7	5	43.15	43.29
836.8	5	43.234	43.35

836.9	5	43.297	43.41
837	5	43.381	43.47
837.1	5	43.444	43.525
837.2	5	43.527	43.575
837.3	5	43.59	43.625
837.4	5	43.653	43.675
837.5	5	43.716	43.725
837.6	5	43.779	43.775
837.7	5	43.821	43.825
837.8	5	43.884	43.875
837.9	5	43.925	43.925
838	5	43.967	43.975
838.1	5	44.009	44.015
838.2	5	44.051	44.045
838.3	5	44.093	44.075
838.4	5	44.135	44.105
838.5	5	44.156	44.135
838.6	5	44.198	44.165
838.7	5	44.219	44.195
838.8	5	44.219	44.225
838.9	5	44.24	44.255
839	5	44.261	44.285
839.1	5	44.282	44.31
839.2	5	44.282	44.33
839.3	5	44.302	44.35
839.4	5	44.323	44.37
839.5	5	44.344	44.39
839.6	5	44.365	44.41
839.7	5	44.386	44.43
839.8	5	44.386	44.45
839.9	5	44.407	44.47
840	5	44.428	44.49
840.1	5	44.428	44.515
840.2	5	44.449	44.545
840.3	5	44.47	44.575
840.4	5	44.47	44.605
840.5	5	44.491	44.635
840.6	5	44.491	44.665
840.7	5	44.491	44.695
840.8	5	44.512	44.725
840.9	5	44.512	44.755
841	5	44.533	44.785
841.1	5	44.533	44.805
841.2	5	44.533	44.815
841.3	5	44.554	44.825



841.4	5	44.554	44.835
841.5	5	44.554	44.845
841.6	5	44.575	44.855
841.7	5	44.575	44.865
841.8	5	44.575	44.875
841.9	5	44.596	44.885
842	5	44.596	44.895
842.1	5	44.617	44.905
842.2	5	44.617	44.915
842.3	5	44.617	44.925
842.4	5	44.638	44.935
842.5	5	44.638	44.945
842.6	5	44.659	44.955
842.7	5	44.659	44.965
842.8	5	44.68	44.975
842.9	5	44.7	44.985
843	5	44.721	44.995
843.1	5	44.721	45.005
843.2	5	44.742	45.015
843.3	5	44.763	45.025
843.4	5	44.784	45.035
843.5	5	44.805	45.045
843.6	5	44.805	45.055
843.7	5	44.826	45.065
843.8	5	44.847	45.075
843.9	5	44.868	45.085
844	5	44.889	45.095
844.1	5	44.889	45.115
844.2	5	44.91	45.145
844.3	5	44.931	45.175
844.4	5	44.952	45.205
844.5	5	44.952	45.235
844.6	5	44.973	45.265
844.7	5	44.994	45.295
844.8	5	45.015	45.325
844.9	5	45.036	45.355
845	5	45.036	45.385
845.1	5	45.057	45.415
845.2	5	45.078	45.445
845.3	5	45.098	45.475
845.4	5	45.119	45.505
845.5	5	45.161	45.535
845.6	5	45.203	45.565
845.7	5	45.245	45.595
845.8	5	45.329	45.625

845.9	5	45.329	45.655
846	5	45.371	45.685
846.1	5	45.413	45.715
846.2	5	45.476	45.745
846.3	5	45.517	45.775
846.4	5	45.559	45.805
846.5	5	45.622	45.835
846.6	5	45.664	45.865
846.7	5	45.706	45.895
846.8	5	45.769	45.925
846.9	5	45.811	45.955
847	5	45.873	45.985
847.1	5	45.915	46.015
847.2	5	45.957	46.045
847.3	5	46.02	46.075
847.4	5	46.062	46.105
847.5	5	46.083	46.135
847.6	5	46.125	46.165
847.7	5	46.167	46.195
847.8	5	46.188	46.225
847.9	5	46.23	46.255
848	5	46.251	46.285
848.1	5	46.292	46.31
848.2	5	46.313	46.33
848.3	5	46.355	46.35
848.4	5	46.376	46.37
848.5	5	46.418	46.39
848.6	5	46.418	46.41
848.7	5	46.481	46.43
848.8	5	46.502	46.45
848.9	5	46.544	46.47
849	5	46.565	46.49
849.1	5	46.607	46.515
849.2	5	46.628	46.545
849.3	5	46.649	46.575
849.4	5	46.669	46.605
849.5	5	46.69	46.635
849.6	5	46.711	46.665
849.7	5	46.732	46.695
849.8	5	46.753	46.725
849.9	5	46.774	46.755
850	5	46.774	46.785
850.1	5	46.795	46.805
850.2	5	46.816	46.815
850.3	5	46.837	46.825

850.4	5	46.837	46.835
850.5	5	46.858	46.845
850.6	5	46.858	46.855
850.7	5	46.858	46.865
850.8	5	46.879	46.875
850.9	5	46.879	46.885
851	5	46.9	46.895
851.1	5	46.9	46.905
851.2	5	46.921	46.915
851.3	5	46.921	46.925
851.4	5	46.921	46.935
851.5	5	46.942	46.945
851.6	5	46.942	46.955
851.7	5	46.963	46.965
851.8	5	46.963	46.975
851.9	5	46.984	46.985
852	5	46.984	46.995
852.1	5	46.984	47.005
852.2	5	47.005	47.015
852.3	5	47.005	47.025
852.4	5	47.026	47.035
852.5	5	47.026	47.045
852.6	5	47.026	47.055
852.7	5	47.047	47.065
852.8	5	47.067	47.075
852.9	5	47.067	47.085
853	5	47.067	47.095
853.1	5	47.088	47.105
853.2	5	47.088	47.115
853.3	5	47.109	47.125
853.4	5	47.109	47.135
853.5	5	47.109	47.145
853.6	5	47.13	47.155
853.7	5	47.151	47.165
853.8	5	47.151	47.175
853.9	5	47.151	47.185
854	5	47.151	47.195
854.1	5	47.172	47.205
854.2	5	47.172	47.215
854.3	5	47.193	47.225
854.4	5	47.193	47.235
854.5	5	47.214	47.245
854.6	5	47.214	47.255
854.7	5	47.235	47.265
854.8	5	47.235	47.275

854.9	5	47.235	47.285
855	5	47.256	47.295
855.1	5	47.256	47.295
855.2	5	47.277	47.285
855.3	5	47.277	47.275
855.4	5	47.298	47.265
855.5	5	47.298	47.255
855.6	5	47.319	47.245
855.7	5	47.319	47.235
855.8	5	47.319	47.225
855.9	5	47.34	47.215
856	5	47.34	47.205
856.1	5	47.361	47.195
856.2	5	47.361	47.185
856.3	5	47.382	47.175
856.4	5	47.382	47.165
856.5	5	47.382	47.155
856.6	5	47.403	47.145
856.7	5	47.403	47.135
856.8	5	47.424	47.125
856.9	5	47.424	47.115
857	5	47.424	47.105
857.1	5	47.445	47.095
857.2	5	47.445	47.085
857.3	5	47.445	47.075
857.4	5	47.445	47.065
857.5	5	47.465	47.055
857.6	5	47.465	47.045
857.7	5	47.465	47.035
857.8	5	47.486	47.025
857.9	5	47.486	47.015
858	5	47.486	47.005
858.1	5	47.507	46.995
858.2	5	47.507	46.985
858.3	5	47.507	46.975
858.4	5	47.528	46.965
858.5	5	47.528	46.955
858.6	5	47.528	46.945
858.7	5	47.528	46.935
858.8	5	47.549	46.925
858.9	5	47.549	46.915
859	5	47.528	46.905
859.1	5	47.528	46.9
859.2	5	47.507	46.9
859.3	5	47.507	46.9

859.4	5	47.486	46.9
859.5	5	47.465	46.9
859.6	5	47.445	46.9
859.7	5	47.424	46.9
859.8	5	47.424	46.9
859.9	5	47.403	46.9
860	5	47.403	46.9
860.1	5	47.382	46.9
860.2	5	47.361	46.9
860.3	5	47.361	46.9
860.4	5	47.34	46.9
860.5	5	47.34	46.9
860.6	5	47.34	46.9
860.7	5	47.319	46.9
860.8	5	47.319	46.9
860.9	5	47.319	46.9
861	5	47.319	46.9
861.1	5	47.319	46.905
861.2	5	47.319	46.915
861.3	5	47.298	46.925
861.4	5	47.298	46.935
861.5	5	47.298	46.945
861.6	5	47.298	46.955
861.7	5	47.298	46.965
861.8	5	47.319	46.975
861.9	5	47.34	46.985
862	5	47.34	46.995
862.1	5	47.361	47.005
862.2	5	47.403	47.015
862.3	5	47.424	47.025
862.4	5	47.445	47.035
862.5	5	47.445	47.045
862.6	5	47.465	47.055
862.7	5	47.486	47.065
862.8	5	47.507	47.075
862.9	5	47.507	47.085
863	5	47.528	47.095
863.1	5	47.549	47.1
863.2	5	47.57	47.1
863.3	5	47.57	47.1
863.4	5	47.591	47.1
863.5	5	47.612	47.1
863.6	5	47.633	47.1
863.7	5	47.654	47.1
863.8	5	47.654	47.1

863.9	5	47.654	47.1
864	5	47.675	47.1
864.1	5	47.696	47.105
864.2	5	47.696	47.115
864.3	5	47.696	47.125
864.4	5	47.717	47.135
864.5	5	47.717	47.145
864.6	5	47.717	47.155
864.7	5	47.717	47.165
864.8	5	47.717	47.175
864.9	5	47.717	47.185
865	5	47.717	47.195
865.1	5	47.717	47.195
865.2	5	47.717	47.185
865.3	5	47.717	47.175
865.4	5	47.696	47.165
865.5	5	47.675	47.155
865.6	5	47.633	47.145
865.7	5	47.57	47.135
865.8	5	47.507	47.125
865.9	5	47.445	47.115
866	5	47.382	47.105
866.1	5	47.34	47.095
866.2	5	47.277	47.085
866.3	5	47.235	47.075
866.4	5	47.235	47.065
866.5	5	47.214	47.055
866.6	5	47.214	47.045
866.7	5	47.193	47.035
866.8	5	47.193	47.025
866.9	5	47.172	47.015
867	5	47.172	47.005
867.1	5	47.172	46.995
867.2	5	47.151	46.985
867.3	5	47.151	46.975
867.4	5	47.13	46.965
867.5	5	47.13	46.955
867.6	5	47.109	46.945
867.7	5	47.088	46.935
867.8	5	47.047	46.925
867.9	5	47.026	46.915
868	5	46.984	46.905
868.1	5	46.942	46.88
868.2	5	46.9	46.84
868.3	5	46.858	46.8

868.4	5	46.816	46.76
868.5	5	46.795	46.72
868.6	5	46.753	46.68
868.7	5	46.732	46.64
868.8	5	46.711	46.6
868.9	5	46.69	46.56
869	5	46.669	46.52
869.1	5	46.69	46.49
869.2	5	46.69	46.47
869.3	5	46.711	46.45
869.4	5	46.732	46.43
869.5	5	46.732	46.41
869.6	5	46.753	46.39
869.7	5	46.774	46.37
869.8	5	46.774	46.35
869.9	5	46.795	46.33
870	5	46.816	46.31
870.1	5	46.816	46.295
870.2	5	46.837	46.285
870.3	5	46.837	46.275
870.4	5	46.858	46.265
870.5	5	46.858	46.255
870.6	5	46.879	46.245
870.7	5	46.879	46.235
870.8	5	46.9	46.225
870.9	5	46.9	46.215
871	5	46.921	46.205
871.1	5	46.921	46.205
871.2	5	46.921	46.215
871.3	5	46.921	46.225
871.4	5	46.942	46.235
871.5	5	46.942	46.245
871.6	5	46.942	46.255
871.7	5	46.963	46.265
871.8	5	46.963	46.275
871.9	5	46.984	46.285
872	5	46.984	46.295
872.1	5	46.984	46.31
872.2	5	47.005	46.33
872.3	5	47.026	46.35
872.4	5	47.026	46.37
872.5	5	47.026	46.39
872.6	5	47.047	46.41
872.7	5	47.047	46.43
872.8	5	47.088	46.45

872.9	5	47.088	46.47
873	5	47.109	46.49
873.1	5	47.13	46.52
873.2	5	47.151	46.56
873.3	5	47.193	46.6
873.4	5	47.193	46.64
873.5	5	47.214	46.68
873.6	5	47.235	46.72
873.7	5	47.277	46.76
873.8	5	47.277	46.8
873.9	5	47.319	46.84
874	5	47.34	46.88
874.1	5	47.361	46.91
874.2	5	47.382	46.93
874.3	5	47.403	46.95
874.4	5	47.424	46.97
874.5	5	47.445	46.99
874.6	5	47.445	47.01
874.7	5	47.465	47.03
874.8	5	47.486	47.05
874.9	5	47.486	47.07
875	5	47.507	47.09
875.1	5	47.507	47.115
875.2	5	47.528	47.145
875.3	5	47.528	47.175
875.4	5	47.549	47.205
875.5	5	47.549	47.235
875.6	5	47.57	47.265
875.7	5	47.57	47.295
875.8	5	47.591	47.325
875.9	5	47.591	47.355
876	5	47.612	47.385
876.1	5	47.633	47.415
876.2	5	47.633	47.445
876.3	5	47.654	47.475
876.4	5	47.654	47.505
876.5	5	47.675	47.535
876.6	5	47.675	47.565
876.7	5	47.696	47.595
876.8	5	47.696	47.625
876.9	5	47.717	47.655
877	5	47.717	47.685
877.1	5	47.738	47.715
877.2	5	47.759	47.745
877.3	5	47.759	47.775



877.4	5	47.78	47.805
877.5	5	47.78	47.835
877.6	5	47.801	47.865
877.7	5	47.801	47.895
877.8	5	47.822	47.925
877.9	5	47.842	47.955
878	5	47.842	47.985
878.1	5	47.863	48.01
878.2	5	47.863	48.03
878.3	5	47.884	48.05
878.4	5	47.884	48.07
878.5	5	47.905	48.09
878.6	5	47.905	48.11
878.7	5	47.926	48.13
878.8	5	47.947	48.15
878.9	5	47.947	48.17
879	5	47.968	48.19
879.1	5	47.968	48.215
879.2	5	48.031	48.245
879.3	5	48.073	48.275
879.4	5	48.115	48.305
879.5	5	48.157	48.335
879.6	5	48.199	48.365
879.7	5	48.24	48.395
879.8	5	48.282	48.425
879.9	5	48.324	48.455
880	5	48.324	48.485
880.1	5	48.408	48.515
880.2	5	48.45	48.545
880.3	5	48.492	48.575
880.4	5	48.492	48.605
880.5	5	48.513	48.635
880.6	5	48.576	48.665
880.7	5	48.597	48.695
880.8	5	48.618	48.725
880.9	5	48.618	48.755
881	5	48.638	48.785
881.1	5	48.68	48.815
881.2	5	48.701	48.845
881.3	5	48.701	48.875
881.4	5	48.722	48.905
881.5	5	48.743	48.935
881.6	5	48.764	48.965
881.7	5	48.764	48.995
881.8	5	48.785	49.025

881.9	5	48.785	49.055
882	5	48.827	49.085
882.1	5	48.827	49.105
882.2	5	48.827	49.115
882.3	5	48.848	49.125
882.4	5	48.848	49.135
882.5	5	48.848	49.145
882.6	5	48.848	49.155
882.7	5	48.869	49.165
882.8	5	48.869	49.175
882.9	5	48.869	49.185
883	5	48.869	49.195
883.1	5	48.869	49.195
883.2	5	48.869	49.185
883.3	5	48.869	49.175
883.4	5	48.869	49.165
883.5	5	48.89	49.155
883.6	5	48.89	49.145
883.7	5	48.89	49.135
883.8	5	48.89	49.125
883.9	5	48.89	49.115
884	5	48.89	49.105
884.1	5	48.89	49.1
884.2	5	48.89	49.1
884.3	5	48.89	49.1
884.4	5	48.89	49.1
884.5	5	48.89	49.1
884.6	5	48.89	49.1
884.7	5	48.89	49.1
884.8	5	48.89	49.1
884.9	5	48.89	49.1
885	5	48.89	49.1
885.1	5	48.89	49.095
885.2	5	48.89	49.085
885.3	5	48.89	49.075
885.4	5	48.89	49.065
885.5	5	48.89	49.055
885.6	5	48.89	49.045
885.7	5	48.89	49.035
885.8	5	48.89	49.025
885.9	5	48.89	49.015
886	5	48.89	49.005
886.1	5	48.89	49
886.2	5	48.89	49
886.3	5	48.89	49

886.4	5	48.89	49
886.5	5	48.89	49
886.6	5	48.911	49
886.7	5	48.89	49
886.8	5	48.911	49
886.9	5	48.911	49
887	5	48.911	49
887.1	5	48.911	49.005
887.2	5	48.911	49.015
887.3	5	48.932	49.025
887.4	5	48.932	49.035
887.5	5	48.932	49.045
887.6	5	48.932	49.055
887.7	5	48.953	49.065
887.8	5	48.953	49.075
887.9	5	48.974	49.085
888	5	48.974	49.095
888.1	5	48.974	49.105
888.2	5	48.995	49.115
888.3	5	48.995	49.125
888.4	5	48.995	49.135
888.5	5	49.016	49.145
888.6	5	49.016	49.155
888.7	5	49.016	49.165
888.8	5	49.036	49.175
888.9	5	49.036	49.185
889	5	49.057	49.195
889.1	5	49.057	49.205
889.2	5	49.057	49.215
889.3	5	49.057	49.225
889.4	5	49.078	49.235
889.5	5	49.078	49.245
889.6	5	49.078	49.255
889.7	5	49.099	49.265
889.8	5	49.12	49.275
889.9	5	49.12	49.285
890	5	49.141	49.295
890.1	5	49.141	49.305
890.2	5	49.141	49.315
890.3	5	49.162	49.325
890.4	5	49.183	49.335
890.5	5	49.183	49.345
890.6	5	49.204	49.355
890.7	5	49.246	49.365
890.8	5	49.246	49.375

890.9	5	49.288	49.385
891	5	49.288	49.395
891.1	5	49.309	49.405
891.2	5	49.351	49.415
891.3	5	49.372	49.425
891.4	5	49.372	49.435
891.5	5	49.393	49.445
891.6	5	49.414	49.455
891.7	5	49.434	49.465
891.8	5	49.434	49.475
891.9	5	49.434	49.485
892	5	49.455	49.495
892.1	5	49.455	49.5
892.2	5	49.476	49.5
892.3	5	49.476	49.5
892.4	5	49.497	49.5
892.5	5	49.497	49.5
892.6	5	49.518	49.5
892.7	5	49.518	49.5
892.8	5	49.518	49.5
892.9	5	49.539	49.5
893	5	49.539	49.5
893.1	5	49.539	49.5
893.2	5	49.539	49.5
893.3	5	49.539	49.5
893.4	5	49.539	49.5
893.5	5	49.539	49.5
893.6	5	49.518	49.5
893.7	5	49.518	49.5
893.8	5	49.518	49.5
893.9	5	49.518	49.5
894	5	49.497	49.5
894.1	5	49.497	49.495
894.2	5	49.476	49.485
894.3	5	49.476	49.475
894.4	5	49.476	49.465
894.5	5	49.476	49.455
894.6	5	49.455	49.445
894.7	5	49.455	49.435
894.8	5	49.434	49.425
894.9	5	49.434	49.415
895	5	49.414	49.405
895.1	5	49.393	49.385
895.2	5	49.393	49.355
895.3	5	49.372	49.325

895.4	5	49.351	49.295
895.5	5	49.33	49.265
895.6	5	49.309	49.235
895.7	5	49.288	49.205
895.8	5	49.267	49.175
895.9	5	49.225	49.145
896	5	49.204	49.115
896.1	5	49.162	49.09
896.2	5	49.12	49.07
896.3	5	49.099	49.05
896.4	5	49.078	49.03
896.5	5	49.057	49.01
896.6	5	49.016	48.99
896.7	5	48.974	48.97
896.8	5	48.953	48.95
896.9	5	48.911	48.93
897	5	48.89	48.91
897.1	5	48.848	48.885
897.2	5	48.827	48.855
897.3	5	48.785	48.825
897.4	5	48.743	48.795
897.5	5	48.722	48.765
897.6	5	48.68	48.735
897.7	5	48.659	48.705
897.8	5	48.618	48.675
897.9	5	48.576	48.645
898	5	48.555	48.615
898.1	5	48.513	48.59
898.2	5	48.492	48.57
898.3	5	48.45	48.55
898.4	5	48.45	48.53
898.5	5	48.387	48.51
898.6	5	48.345	48.49
898.7	5	48.324	48.47
898.8	5	48.282	48.45
898.9	5	48.282	48.43
899	5	48.22	48.41
899.1	5	48.199	48.385
899.2	5	48.157	48.355
899.3	5	48.157	48.325
899.4	5	48.136	48.295
899.5	5	48.073	48.265
899.6	5	48.052	48.235
899.7	5	48.052	48.205
899.8	5	48.031	48.175

899.9	5	47.968	48.145
900	5	47.947	48.115
900.1	5	47.905	48.08
900.2	5	47.905	48.04
900.3	5	47.884	48
900.4	5	47.842	47.96
900.5	5	47.842	47.92
900.6	5	47.842	47.88
900.7	5	47.78	47.84
900.8	5	47.759	47.8
900.9	5	47.717	47.76
901	5	47.696	47.72
901.1	5	47.696	47.685
901.2	5	47.654	47.655
901.3	5	47.633	47.625
901.4	5	47.612	47.595
901.5	5	47.612	47.565
901.6	5	47.612	47.535
901.7	5	47.591	47.505
901.8	5	47.591	47.475
901.9	5	47.612	47.445
902	5	47.612	47.415
902.1	5	47.612	47.395
902.2	5	47.633	47.385
902.3	5	47.654	47.375
902.4	5	47.654	47.365
902.5	5	47.675	47.355
902.6	5	47.696	47.345
902.7	5	47.717	47.335
902.8	5	47.717	47.325
902.9	5	47.738	47.315
903	5	47.759	47.305
903.1	5	47.78	47.31
903.2	5	47.801	47.33
903.3	5	47.801	47.35
903.4	5	47.822	47.37
903.5	5	47.842	47.39
903.6	5	47.863	47.41
903.7	5	47.863	47.43
903.8	5	47.884	47.45
903.9	5	47.884	47.47
904	5	47.905	47.49
904.1	5	47.884	47.515
904.2	5	47.863	47.545
904.3	5	47.842	47.575

904.4	5	47.842	47.605
904.5	5	47.822	47.635
904.6	5	47.801	47.665
904.7	5	47.801	47.695
904.8	5	47.801	47.725
904.9	5	47.801	47.755
905	5	47.801	47.785
905.1	5	47.801	47.805
905.2	5	47.801	47.815
905.3	5	47.801	47.825
905.4	5	47.801	47.835
905.5	5	47.822	47.845
905.6	5	47.822	47.855
905.7	5	47.822	47.865
905.8	5	47.822	47.875
905.9	5	47.822	47.885
906	5	47.822	47.895
906.1	5	47.822	47.905
906.2	5	47.822	47.915
906.3	5	47.822	47.925
906.4	5	47.822	47.935
906.5	5	47.822	47.945
906.6	5	47.822	47.955
906.7	5	47.822	47.965
906.8	5	47.822	47.975
906.9	5	47.822	47.985
907	5	47.822	47.995
907.1	5	47.822	47.995
907.2	5	47.822	47.985
907.3	5	47.842	47.975
907.4	5	47.842	47.965
907.5	5	47.842	47.955
907.6	5	47.842	47.945
907.7	5	47.842	47.935
907.8	5	47.842	47.925
907.9	5	47.842	47.915
908	5	47.842	47.905
908.1	5	47.842	47.9
908.2	5	47.842	47.9
908.3	5	47.863	47.9
908.4	5	47.863	47.9
908.5	5	47.863	47.9
908.6	5	47.842	47.9
908.7	5	47.842	47.9
908.8	5	47.842	47.9

908.9	5	47.842	47.9
909	5	47.842	47.9
909.1	5	47.842	47.9
909.2	5	47.842	47.9
909.3	5	47.842	47.9
909.4	5	47.842	47.9
909.5	5	47.842	47.9
909.6	5	47.842	47.9
909.7	5	47.842	47.9
909.8	5	47.842	47.9
909.9	5	47.842	47.9
910	5	47.842	47.9
910.1	5	47.842	47.905
910.2	5	47.842	47.915
910.3	5	47.842	47.925
910.4	5	47.842	47.935
910.5	5	47.842	47.945
910.6	5	47.842	47.955
910.7	5	47.842	47.965
910.8	5	47.842	47.975
910.9	5	47.842	47.985
911	5	47.842	47.995
911.1	5	47.842	48
911.2	5	47.842	48
911.3	5	47.842	48
911.4	5	47.842	48
911.5	5	47.842	48
911.6	5	47.842	48
911.7	5	47.842	48
911.8	5	47.842	48
911.9	5	47.863	48
912	5	47.863	48
912.1	5	47.863	48
912.2	5	47.863	48
912.3	5	47.863	48
912.4	5	47.863	48
912.5	5	47.863	48
912.6	5	47.863	48
912.7	5	47.863	48
912.8	5	47.863	48
912.9	5	47.863	48
913	5	47.863	48
913.1	5	47.863	47.995
913.2	5	47.842	47.985
913.3	5	47.842	47.975



913.4	5	47.822	47.965
913.5	5	47.822	47.955
913.6	5	47.759	47.945
913.7	5	47.738	47.935
913.8	5	47.717	47.925
913.9	5	47.696	47.915
914	5	47.675	47.905
914.1	5	47.633	47.87
914.2	5	47.612	47.81
914.3	5	47.57	47.75
914.4	5	47.528	47.69
914.5	5	47.465	47.63
914.6	5	47.403	47.57
914.7	5	47.34	47.51
914.8	5	47.277	47.45
914.9	5	47.193	47.39
915	5	47.109	47.33
915.1	5	47.047	47.235
915.2	5	46.963	47.105
915.3	5	46.9	46.975
915.4	5	46.816	46.845
915.5	5	46.732	46.715
915.6	5	46.669	46.585
915.7	5	46.586	46.455
915.8	5	46.502	46.325
915.9	5	46.397	46.195
916	5	46.23	46.065
916.1	5	45.978	45.865
916.2	5	45.685	45.595
916.3	5	45.392	45.325
916.4	5	45.078	45.055
916.5	5	44.784	44.785
916.6	5	44.491	44.515
916.7	5	44.219	44.245
916.8	5	43.967	43.975
916.9	5	43.737	43.705
917	5	43.527	43.435
917.1	5	43.318	43.195
917.2	5	43.15	42.985
917.3	5	43.15	42.775
917.4	5	42.815	42.565
917.5	5	42.648	42.355
917.6	5	42.48	42.145
917.7	5	42.48	41.935
917.8	5	42.313	41.725

917.9	5	41.977	41.515
918	5	41.789	41.305
918.1	5	41.6	41.115
918.2	5	41.6	40.945
918.3	5	41.181	40.775
918.4	5	40.972	40.605
918.5	5	40.762	40.435
918.6	5	40.762	40.265
918.7	5	40.574	40.095
918.8	5	40.239	39.925
918.9	5	40.155	39.755
919	5	40.155	39.585
919.1	5	40.071	39.485
919.2	5	39.987	39.455
919.3	5	39.841	39.425
919.4	5	39.778	39.395
919.5	5	39.778	39.365
919.6	5	39.694	39.335
919.7	5	39.631	39.305
919.8	5	39.485	39.275
919.9	5	39.485	39.245
920	5	39.422	39.215
920.1	5	39.359	39.19
920.2	5	39.212	39.17
920.3	5	39.171	39.15
920.4	5	39.171	39.13
920.5	5	39.129	39.11
920.6	5	39.087	39.09
920.7	5	38.982	39.07
920.8	5	38.982	39.05
920.9	5	38.94	39.03
921	5	38.919	39.01
921.1	5	38.877	39
921.2	5	38.835	39
921.3	5	38.814	39
921.4	5	38.814	39
921.5	5	38.793	39
921.6	5	38.773	39
921.7	5	38.773	39
921.8	5	38.793	39
921.9	5	38.835	39
922	5	38.856	39
922.1	5	38.898	39.005
922.2	5	38.919	39.015
922.3	5	38.961	39.025

922.4	5	39.003	39.035
922.5	5	39.066	39.045
922.6	5	39.108	39.055
922.7	5	39.171	39.065
922.8	5	39.212	39.075
922.9	5	39.275	39.085
923	5	39.317	39.095
923.1	5	39.38	39.12
923.2	5	39.422	39.16
923.3	5	39.485	39.2
923.4	5	39.527	39.24
923.5	5	39.589	39.28
923.6	5	39.631	39.32
923.7	5	39.694	39.36
923.8	5	39.757	39.4
923.9	5	39.799	39.44
924	5	39.862	39.48
924.1	5	39.904	39.53
924.2	5	39.966	39.59
924.3	5	40.008	39.65
924.4	5	40.071	39.71
924.5	5	40.134	39.77
924.6	5	40.176	39.83
924.7	5	40.239	39.89
924.8	5	40.302	39.95
924.9	5	40.364	40.01
925	5	40.427	40.07
925.1	5	40.49	40.145
925.2	5	40.553	40.235
925.3	5	40.616	40.325
925.4	5	40.679	40.415
925.5	5	40.742	40.505
925.6	5	40.804	40.595
925.7	5	40.867	40.685
925.8	5	40.951	40.775
925.9	5	41.014	40.865
926	5	41.077	40.955
926.1	5	41.14	41.05
926.2	5	41.202	41.15
926.3	5	41.286	41.25
926.4	5	41.37	41.35
926.5	5	41.37	41.45
926.6	5	41.517	41.55
926.7	5	41.6	41.65
926.8	5	41.663	41.75

926.9	5	41.747	41.85
927	5	41.747	41.95
927.1	5	41.873	42.055
927.2	5	41.935	42.165
927.3	5	41.998	42.275
927.4	5	41.998	42.385
927.5	5	42.124	42.495
927.6	5	42.187	42.605
927.7	5	42.25	42.715
927.8	5	42.25	42.825
927.9	5	42.313	42.935
928	5	42.438	43.045
928.1	5	42.501	43.13
928.2	5	42.564	43.19
928.3	5	42.564	43.25
928.4	5	42.627	43.31
928.5	5	42.752	43.37
928.6	5	42.815	43.43
928.7	5	42.815	43.49
928.8	5	42.878	43.55
928.9	5	42.962	43.61
929	5	43.088	43.67
929.1	5	43.088	43.72
929.2	5	43.15	43.76
929.3	5	43.213	43.8
929.4	5	43.36	43.84
929.5	5	43.423	43.88
929.6	5	43.423	43.92
929.7	5	43.486	43.96
929.8	5	43.569	44
929.9	5	43.695	44.04
930	5	43.695	44.08
930.1	5	43.737	44.11
930.2	5	43.8	44.13
930.3	5	43.884	44.15
930.4	5	44.009	44.17
930.5	5	44.009	44.19
930.6	5	44.072	44.21
930.7	5	44.114	44.23
930.8	5	44.198	44.25
930.9	5	44.24	44.27
931	5	44.302	44.29
931.1	5	44.365	44.305
931.2	5	44.407	44.315
931.3	5	44.47	44.325

931.4	5	44.533	44.335
931.5	5	44.596	44.345
931.6	5	44.638	44.355
931.7	5	44.7	44.365
931.8	5	44.763	44.375
931.9	5	44.805	44.385
932	5	44.868	44.395
932.1	5	44.91	44.41
932.2	5	44.973	44.43
932.3	5	45.015	44.45
932.4	5	45.078	44.47
932.5	5	45.119	44.49
932.6	5	45.161	44.51
932.7	5	45.203	44.53
932.8	5	45.224	44.55
932.9	5	45.245	44.57
933	5	45.266	44.59
933.1	5	45.287	44.605
933.2	5	45.308	44.615
933.3	5	45.329	44.625
933.4	5	45.329	44.635
933.5	5	45.329	44.645
933.6	5	45.35	44.655
933.7	5	45.35	44.665
933.8	5	45.35	44.675
933.9	5	45.371	44.685
934	5	45.371	44.695
934.1	5	45.371	44.71
934.2	5	45.392	44.73
934.3	5	45.392	44.75
934.4	5	45.413	44.77
934.5	5	45.434	44.79
934.6	5	45.455	44.81
934.7	5	45.476	44.83
934.8	5	45.496	44.85
934.9	5	45.517	44.87
935	5	45.517	44.89
935.1	5	45.538	44.915
935.2	5	45.559	44.945
935.3	5	45.58	44.975
935.4	5	45.601	45.005
935.5	5	45.622	45.035
935.6	5	45.622	45.065
935.7	5	45.643	45.095
935.8	5	45.664	45.125

935.9	5	45.685	45.155
936	5	45.706	45.185
936.1	5	45.706	45.225
936.2	5	45.748	45.275
936.3	5	45.769	45.325
936.4	5	45.79	45.375
936.5	5	45.79	45.425
936.6	5	45.811	45.475
936.7	5	45.853	45.525
936.8	5	45.873	45.575
936.9	5	45.894	45.625
937	5	45.894	45.675
937.1	5	45.936	45.71
937.2	5	45.978	45.73
937.3	5	45.999	45.75
937.4	5	45.999	45.77
937.5	5	46.02	45.79
937.6	5	46.083	45.81
937.7	5	46.125	45.83
937.8	5	46.146	45.85
937.9	5	46.146	45.87
938	5	46.167	45.89
938.1	5	46.23	45.92
938.2	5	46.251	45.96
938.3	5	46.251	46
938.4	5	46.271	46.04
938.5	5	46.313	46.08
938.6	5	46.355	46.12
938.7	5	46.355	46.16
938.8	5	46.397	46.2
938.9	5	46.418	46.24
939	5	46.46	46.28
939.1	5	46.481	46.325
939.2	5	46.481	46.375
939.3	5	46.523	46.425
939.4	5	46.544	46.475
939.5	5	46.607	46.525
939.6	5	46.607	46.575
939.7	5	46.628	46.625
939.8	5	46.649	46.675
939.9	5	46.69	46.725
940	5	46.711	46.775
940.1	5	46.732	46.805
940.2	5	46.774	46.815
940.3	5	46.795	46.825

940.4	5	46.837	46.835
940.5	5	46.858	46.845
940.6	5	46.879	46.855
940.7	5	46.921	46.865
940.8	5	46.942	46.875
940.9	5	46.963	46.885
941	5	46.984	46.895
941.1	5	47.005	46.905
941.2	5	47.026	46.915
941.3	5	47.047	46.925
941.4	5	47.047	46.935
941.5	5	47.067	46.945
941.6	5	47.088	46.955
941.7	5	47.109	46.965
941.8	5	47.13	46.975
941.9	5	47.151	46.985
942	5	47.172	46.995
942.1	5	47.193	47.005
942.2	5	47.214	47.015
942.3	5	47.256	47.025
942.4	5	47.277	47.035
942.5	5	47.298	47.045
942.6	5	47.34	47.055
942.7	5	47.382	47.065
942.8	5	47.403	47.075
942.9	5	47.445	47.085
943	5	47.486	47.095
943.1	5	47.528	47.125
943.2	5	47.57	47.175
943.3	5	47.612	47.225
943.4	5	47.633	47.275
943.5	5	47.675	47.325
943.6	5	47.717	47.375
943.7	5	47.738	47.425
943.8	5	47.78	47.475
943.9	5	47.822	47.525
944	5	47.842	47.575
944.1	5	47.884	47.615
944.2	5	47.905	47.645
944.3	5	47.947	47.675
944.4	5	47.968	47.705
944.5	5	47.989	47.735
944.6	5	48.01	47.765
944.7	5	48.031	47.795
944.8	5	48.073	47.825

944.9	5	48.094	47.855
945	5	48.115	47.885
945.1	5	48.115	47.905
945.2	5	48.115	47.915
945.3	5	48.115	47.925
945.4	5	48.115	47.935
945.5	5	48.094	47.945
945.6	5	48.094	47.955
945.7	5	48.094	47.965
945.8	5	48.073	47.975
945.9	5	48.052	47.985
946	5	48.01	47.995
946.1	5	47.989	48
946.2	5	47.989	48
946.3	5	47.884	48
946.4	5	47.842	48
946.5	5	47.801	48
946.6	5	47.801	48
946.7	5	47.738	48
946.8	5	47.633	48
946.9	5	47.57	48
947	5	47.528	48
947.1	5	47.528	47.995
947.2	5	47.486	47.985
947.3	5	47.424	47.975
947.4	5	47.424	47.965
947.5	5	47.424	47.955
947.6	5	47.403	47.945
947.7	5	47.403	47.935
947.8	5	47.382	47.925
947.9	5	47.382	47.915
948	5	47.382	47.905
948.1	5	47.382	47.895
948.2	5	47.361	47.885
948.3	5	47.361	47.875
948.4	5	47.361	47.865
948.5	5	47.361	47.855
948.6	5	47.34	47.845
948.7	5	47.34	47.835
948.8	5	47.34	47.825
948.9	5	47.34	47.815
949	5	47.319	47.805
949.1	5	47.298	47.775
949.2	5	47.214	47.725
949.3	5	47.214	47.675



949.4	5	47.172	47.625
949.5	5	47.109	47.575
949.6	5	47.047	47.525
949.7	5	47.005	47.475
949.8	5	46.942	47.425
949.9	5	46.879	47.375
950	5	46.837	47.325
950.1	5	46.795	47.27
950.2	5	46.753	47.21
950.3	5	46.711	47.15
950.4	5	46.669	47.09
950.5	5	46.628	47.03
950.6	5	46.586	46.97
950.7	5	46.565	46.91
950.8	5	46.523	46.85
950.9	5	46.502	46.79
951	5	46.481	46.73
951.1	5	46.46	46.675
951.2	5	46.439	46.625
951.3	5	46.418	46.575
951.4	5	46.397	46.525
951.5	5	46.376	46.475
951.6	5	46.355	46.425
951.7	5	46.334	46.375
951.8	5	46.313	46.325
951.9	5	46.292	46.275
952	5	46.271	46.225
952.1	5	46.271	46.185
952.2	5	46.251	46.155
952.3	5	46.23	46.125
952.4	5	46.209	46.095
952.5	5	46.209	46.065
952.6	5	46.167	46.035
952.7	5	46.146	46.005
952.8	5	46.125	45.975
952.9	5	46.104	45.945
953	5	46.083	45.915
953.1	5	46.062	45.89
953.2	5	46.062	45.87
953.3	5	46.041	45.85
953.4	5	46.02	45.83
953.5	5	45.999	45.81
953.6	5	45.978	45.79
953.7	5	45.957	45.77
953.8	5	45.936	45.75

953.9	5	45.915	45.73
954	5	45.894	45.71
954.1	5	45.873	45.69
954.2	5	45.853	45.67
954.3	5	45.832	45.65
954.4	5	45.811	45.63
954.5	5	45.79	45.61
954.6	5	45.769	45.59
954.7	5	45.727	45.57
954.8	5	45.706	45.55
954.9	5	45.685	45.53
955	5	45.685	45.51
955.1	5	45.643	45.495
955.2	5	45.622	45.485
955.3	5	45.601	45.475
955.4	5	45.58	45.465
955.5	5	45.58	45.455
955.6	5	45.538	45.445
955.7	5	45.517	45.435
955.8	5	45.496	45.425
955.9	5	45.496	45.415
956	5	45.455	45.405
956.1	5	45.413	45.395
956.2	5	45.392	45.385
956.3	5	45.371	45.375
956.4	5	45.371	45.365
956.5	5	45.329	45.355
956.6	5	45.308	45.345
956.7	5	45.287	45.335
956.8	5	45.287	45.325
956.9	5	45.266	45.315
957	5	45.203	45.305
957.1	5	45.161	45.285
957.2	5	45.161	45.255
957.3	5	45.14	45.225
957.4	5	45.098	45.195
957.5	5	45.015	45.165
957.6	5	44.973	45.135
957.7	5	44.973	45.105
957.8	5	44.91	45.075
957.9	5	44.847	45.045
958	5	44.742	45.015
958.1	5	44.742	44.95
958.2	5	44.68	44.85
958.3	5	44.617	44.75

958.4	5	44.554	44.65
958.5	5	44.407	44.55
958.6	5	44.407	44.45
958.7	5	44.344	44.35
958.8	5	44.282	44.25
958.9	5	44.219	44.15
959	5	44.072	44.05
959.1	5	44.072	43.955
959.2	5	43.988	43.865
959.3	5	43.925	43.775
959.4	5	43.842	43.685
959.5	5	43.779	43.595
959.6	5	43.695	43.505
959.7	5	43.632	43.415
959.8	5	43.569	43.325
959.9	5	43.507	43.235
960	5	43.444	43.145
960.1	5	43.402	43.055
960.2	5	43.318	42.965
960.3	5	43.276	42.875
960.4	5	43.213	42.785
960.5	5	43.15	42.695
960.6	5	43.088	42.605
960.7	5	43.025	42.515
960.8	5	42.962	42.425
960.9	5	42.878	42.335
961	5	42.815	42.245
961.1	5	42.752	42.165
961.2	5	42.669	42.095
961.3	5	42.606	42.025
961.4	5	42.522	41.955
961.5	5	42.459	41.885
961.6	5	42.375	41.815
961.7	5	42.313	41.745
961.8	5	42.229	41.675
961.9	5	42.166	41.605
962	5	42.103	41.535
962.1	5	42.04	41.5
962.2	5	41.998	41.5
962.3	5	41.956	41.5
962.4	5	41.894	41.5
962.5	5	41.852	41.5
962.6	5	41.831	41.5
962.7	5	41.81	41.5
962.8	5	41.789	41.5

962.9	5	41.789	41.5
963	5	41.789	41.5
963.1	5	41.789	41.53
963.2	5	41.789	41.59
963.3	5	41.81	41.65
963.4	5	41.81	41.71
963.5	5	41.852	41.77
963.6	5	41.894	41.83
963.7	5	41.935	41.89
963.8	5	41.977	41.95
963.9	5	42.019	42.01
964	5	42.082	42.07
964.1	5	42.124	42.14
964.2	5	42.187	42.22
964.3	5	42.187	42.3
964.4	5	42.292	42.38
964.5	5	42.333	42.46
964.6	5	42.396	42.54
964.7	5	42.396	42.62
964.8	5	42.501	42.7
964.9	5	42.564	42.78
965	5	42.627	42.86
965.1	5	42.69	42.93
965.2	5	42.69	42.99
965.3	5	42.815	43.05
965.4	5	42.815	43.11
965.5	5	42.92	43.17
965.6	5	42.92	43.23
965.7	5	42.983	43.29
965.8	5	43.088	43.35
965.9	5	43.15	43.41
966	5	43.15	43.47
966.1	5	43.192	43.52
966.2	5	43.318	43.56
966.3	5	43.36	43.6
966.4	5	43.402	43.64
966.5	5	43.402	43.68
966.6	5	43.465	43.72
966.7	5	43.569	43.76
966.8	5	43.611	43.8
966.9	5	43.611	43.84
967	5	43.653	43.88
967.1	5	43.695	43.885
967.2	5	43.737	43.855
967.3	5	43.758	43.825

967.4	5	43.758	43.795
967.5	5	43.758	43.765
967.6	5	43.758	43.735
967.7	5	43.716	43.705
967.8	5	43.716	43.675
967.9	5	43.695	43.645
968	5	43.653	43.615
968.1	5	43.632	43.585
968.2	5	43.548	43.555
968.3	5	43.548	43.525
968.4	5	43.527	43.495
968.5	5	43.486	43.465
968.6	5	43.465	43.435
968.7	5	43.423	43.405
968.8	5	43.402	43.375
968.9	5	43.402	43.345
969	5	43.381	43.315
969.1	5	43.36	43.285
969.2	5	43.339	43.255
969.3	5	43.318	43.225
969.4	5	43.297	43.195
969.5	5	43.276	43.165
969.6	5	43.255	43.135
969.7	5	43.234	43.105
969.8	5	43.234	43.075
969.9	5	43.213	43.045
970	5	43.192	43.015
970.1	5	43.171	43.005
970.2	5	43.171	43.015
970.3	5	43.15	43.025
970.4	5	43.129	43.035
970.5	5	43.129	43.045
970.6	5	43.129	43.055
970.7	5	43.129	43.065
970.8	5	43.129	43.075
970.9	5	43.129	43.085
971	5	43.129	43.095
971.1	5	43.129	43.115
971.2	5	43.15	43.145
971.3	5	43.15	43.175
971.4	5	43.171	43.205
971.5	5	43.171	43.235
971.6	5	43.192	43.265
971.7	5	43.213	43.295
971.8	5	43.234	43.325

971.9	5	43.255	43.355
972	5	43.297	43.385
972.1	5	43.318	43.425
972.2	5	43.36	43.475
972.3	5	43.402	43.525
972.4	5	43.423	43.575
972.5	5	43.465	43.625
972.6	5	43.507	43.675
972.7	5	43.548	43.725
972.8	5	43.59	43.775
972.9	5	43.632	43.825
973	5	43.674	43.875
973.1	5	43.737	43.92
973.2	5	43.779	43.96
973.3	5	43.821	44
973.4	5	43.863	44.04
973.5	5	43.863	44.08
973.6	5	43.946	44.12
973.7	5	43.988	44.16
973.8	5	44.051	44.2
973.9	5	44.093	44.24
974	5	44.093	44.28
974.1	5	44.177	44.315
974.2	5	44.219	44.345
974.3	5	44.261	44.375
974.4	5	44.261	44.405
974.5	5	44.344	44.435
974.6	5	44.365	44.465
974.7	5	44.407	44.495
974.8	5	44.407	44.525
974.9	5	44.449	44.555
975	5	44.512	44.585
975.1	5	44.554	44.615
975.2	5	44.596	44.645
975.3	5	44.596	44.675
975.4	5	44.617	44.705
975.5	5	44.7	44.735
975.6	5	44.721	44.765
975.7	5	44.721	44.795
975.8	5	44.763	44.825
975.9	5	44.805	44.855
976	5	44.868	44.885
976.1	5	44.889	44.895
976.2	5	44.889	44.885
976.3	5	44.91	44.875

976.4	5	44.952	44.865
976.5	5	44.952	44.855
976.6	5	44.952	44.845
976.7	5	44.973	44.835
976.8	5	44.973	44.825
976.9	5	44.952	44.815
977	5	44.952	44.805
977.1	5	44.952	44.78
977.2	5	44.931	44.74
977.3	5	44.91	44.7
977.4	5	44.847	44.66
977.5	5	44.847	44.62
977.6	5	44.826	44.58
977.7	5	44.784	44.54
977.8	5	44.742	44.5
977.9	5	44.7	44.46
978	5	44.659	44.42
978.1	5	44.617	44.375
978.2	5	44.554	44.325
978.3	5	44.512	44.275
978.4	5	44.47	44.225
978.5	5	44.47	44.175
978.6	5	44.365	44.125
978.7	5	44.302	44.075
978.8	5	44.261	44.025
978.9	5	44.219	43.975
979	5	44.177	43.925
979.1	5	44.114	43.875
979.2	5	44.072	43.825
979.3	5	44.03	43.775
979.4	5	43.967	43.725
979.5	5	43.925	43.675
979.6	5	43.884	43.625
979.7	5	43.821	43.575
979.8	5	43.779	43.525
979.9	5	43.737	43.475
980	5	43.695	43.425
980.1	5	43.653	43.39
980.2	5	43.59	43.37
980.3	5	43.548	43.35
980.4	5	43.507	43.33
980.5	5	43.465	43.31
980.6	5	43.423	43.29
980.7	5	43.381	43.27
980.8	5	43.339	43.25

980.9	5	43.297	43.23
981	5	43.255	43.21
981.1	5	43.213	43.2
981.2	5	43.171	43.2
981.3	5	43.15	43.2
981.4	5	43.109	43.2
981.5	5	43.067	43.2
981.6	5	43.025	43.2
981.7	5	42.983	43.2
981.8	5	42.941	43.2
981.9	5	42.92	43.2
982	5	42.878	43.2
982.1	5	42.836	43.195
982.2	5	42.815	43.185
982.3	5	42.794	43.175
982.4	5	42.773	43.165
982.5	5	42.773	43.155
982.6	5	42.752	43.145
982.7	5	42.731	43.135
982.8	5	42.731	43.125
982.9	5	42.731	43.115
983	5	42.711	43.105
983.1	5	42.711	43.095
983.2	5	42.711	43.085
983.3	5	42.711	43.075
983.4	5	42.711	43.065
983.5	5	42.711	43.055
983.6	5	42.711	43.045
983.7	5	42.731	43.035
983.8	5	42.731	43.025
983.9	5	42.731	43.015
984	5	42.731	43.005
984.1	5	42.752	43
984.2	5	42.773	43
984.3	5	42.773	43
984.4	5	42.794	43
984.5	5	42.794	43
984.6	5	42.794	43
984.7	5	42.815	43
984.8	5	42.815	43
984.9	5	42.815	43
985	5	42.836	43
985.1	5	42.857	43.005
985.2	5	42.878	43.015
985.3	5	42.878	43.025



985.4	5	42.899	43.035
985.5	5	42.92	43.045
985.6	5	42.941	43.055
985.7	5	42.941	43.065
985.8	5	42.941	43.075
985.9	5	42.962	43.085
986	5	42.962	43.095
986.1	5	42.983	43.115
986.2	5	42.983	43.145
986.3	5	42.983	43.175
986.4	5	43.004	43.205
986.5	5	43.004	43.235
986.6	5	43.025	43.265
986.7	5	43.025	43.295
986.8	5	43.046	43.325
986.9	5	43.046	43.355
987	5	43.067	43.385
987.1	5	43.088	43.425
987.2	5	43.109	43.475
987.3	5	43.129	43.525
987.4	5	43.15	43.575
987.5	5	43.213	43.625
987.6	5	43.213	43.675
987.7	5	43.234	43.725
987.8	5	43.255	43.775
987.9	5	43.276	43.825
988	5	43.318	43.875
988.1	5	43.339	43.905
988.2	5	43.381	43.915
988.3	5	43.402	43.925
988.4	5	43.423	43.935
988.5	5	43.444	43.945
988.6	5	43.486	43.955
988.7	5	43.527	43.965
988.8	5	43.569	43.975
988.9	5	43.59	43.985
989	5	43.611	43.995
989.1	5	43.653	43.975
989.2	5	43.653	43.925
989.3	5	43.674	43.875
989.4	5	43.674	43.825
989.5	5	43.653	43.775
989.6	5	43.632	43.725
989.7	5	43.611	43.675
989.8	5	43.548	43.625

989.9	5	43.486	43.575
990	5	43.423	43.525
990.1	5	43.36	43.455
990.2	5	43.297	43.365
990.3	5	43.234	43.275
990.4	5	43.15	43.185
990.5	5	43.088	43.095
990.6	5	43.004	43.005
990.7	5	42.941	42.915
990.8	5	42.857	42.825
990.9	5	42.794	42.735
991	5	42.711	42.645
991.1	5	42.648	42.545
991.2	5	42.564	42.435
991.3	5	42.501	42.325
991.4	5	42.501	42.215
991.5	5	42.354	42.105
991.6	5	42.292	41.995
991.7	5	42.208	41.885
991.8	5	42.145	41.775
991.9	5	42.061	41.665
992	5	41.998	41.555
992.1	5	41.915	41.46
992.2	5	41.852	41.38
992.3	5	41.789	41.3
992.4	5	41.789	41.22
992.5	5	41.642	41.14
992.6	5	41.558	41.06
992.7	5	41.496	40.98
992.8	5	41.412	40.9
992.9	5	41.412	40.82
993	5	41.286	40.74
993.1	5	41.202	40.665
993.2	5	41.14	40.595
993.3	5	41.14	40.525
993.4	5	40.993	40.455
993.5	5	40.93	40.385
993.6	5	40.846	40.315
993.7	5	40.783	40.245
993.8	5	40.783	40.175
993.9	5	40.637	40.105
994	5	40.574	40.035
994.1	5	40.532	40
994.2	5	40.532	40
994.3	5	40.49	40

994.4	5	40.406	40
994.5	5	40.385	40
994.6	5	40.385	40
994.7	5	40.344	40
994.8	5	40.323	40
994.9	5	40.302	40
995	5	40.302	40
995.1	5	40.302	40.015
995.2	5	40.302	40.045
995.3	5	40.302	40.075
995.4	5	40.323	40.105
995.5	5	40.323	40.135
995.6	5	40.344	40.167
995.7	5	40.364	40.195
995.8	5	40.427	40.225
995.9	5	40.427	40.255
996	5	40.448	40.285
996.1	5	40.49	40.335
996.2	5	40.511	40.405
996.3	5	40.574	40.475
996.4	5	40.574	40.545
996.5	5	40.616	40.615
996.6	5	40.658	40.685
996.7	5	40.762	40.755
996.8	5	40.762	40.825
996.9	5	40.804	40.895
997	5	40.846	40.965
997.1	5	40.888	41.05
997.2	5	40.951	41.15
997.3	5	40.993	41.25
997.4	5	41.056	41.35
997.5	5	41.098	41.45
997.6	5	41.16	41.55
997.7	5	41.202	41.65
997.8	5	41.265	41.75
997.9	5	41.307	41.85
998	5	41.37	41.95
998.1	5	41.433	42.035
998.2	5	41.496	42.105
998.3	5	41.558	42.175
998.4	5	41.621	42.245
998.5	5	41.684	42.315
998.6	5	41.747	42.385
998.7	5	41.81	42.455
998.8	5	41.873	42.525

998.9	5	41.935	42.595
999	5	42.019	42.665
999.1	5	42.082	42.72
999.2	5	42.145	42.76
999.3	5	42.208	42.8
999.4	5	42.271	42.84
999.5	5	42.333	42.88
999.6	5	42.417	42.92
999.7	5	42.48	42.96
999.8	5	42.543	43
999.9	5	42.606	43.04
1000	5	42.669	43.08
1000.1	5	42.731	43.105
1000.2	5	42.794	43.115
1000.3	5	42.836	43.125
1000.4	5	42.899	43.135
1000.5	5	42.962	43.145
1000.6	5	43.025	43.155
1000.7	5	43.088	43.165
1000.8	5	43.15	43.175
1000.9	5	43.192	43.185
1001	5	43.255	43.195
1001.1	5	43.297	43.21
1001.2	5	43.36	43.23
1001.3	5	43.402	43.25
1001.4	5	43.444	43.27
1001.5	5	43.486	43.29
1001.6	5	43.548	43.31
1001.7	5	43.59	43.33
1001.8	5	43.632	43.35
1001.9	5	43.632	43.37
1002	5	43.716	43.39
1002.1	5	43.737	43.425
1002.2	5	43.779	43.475
1002.3	5	43.821	43.525
1002.4	5	43.863	43.575
1002.5	5	43.884	43.625
1002.6	5	43.925	43.675
1002.7	5	43.946	43.725
1002.8	5	43.946	43.775
1002.9	5	44.009	43.825
1003	5	44.03	43.875
1003.1	5	44.072	43.92
1003.2	5	44.072	43.96
1003.3	5	44.093	44

1003.4	5	44.135	44.04
1003.5	5	44.177	44.08
1003.6	5	44.177	44.12
1003.7	5	44.198	44.16
1003.8	5	44.261	44.2
1003.9	5	44.282	44.24
1004	5	44.302	44.28
1004.1	5	44.302	44.32
1004.2	5	44.344	44.36
1004.3	5	44.407	44.4
1004.4	5	44.407	44.44
1004.5	5	44.407	44.48
1004.6	5	44.47	44.52
1004.7	5	44.491	44.56
1004.8	5	44.575	44.6
1004.9	5	44.575	44.64
1005	5	44.617	44.68
1005.1	5	44.659	44.72
1005.2	5	44.7	44.76
1005.3	5	44.784	44.8
1005.4	5	44.784	44.84
1005.5	5	44.826	44.88
1005.6	5	44.889	44.92
1005.7	5	44.931	44.96
1005.8	5	44.973	45
1005.9	5	45.015	45.04
1006	5	45.057	45.08
1006.1	5	45.119	45.115
1006.2	5	45.203	45.145
1006.3	5	45.203	45.175
1006.4	5	45.245	45.205
1006.5	5	45.308	45.235
1006.6	5	45.35	45.265
1006.7	5	45.392	45.295
1006.8	5	45.434	45.325
1006.9	5	45.496	45.355
1007	5	45.538	45.385
1007.1	5	45.58	45.42
1007.2	5	45.643	45.46
1007.3	5	45.685	45.5
1007.4	5	45.727	45.54
1007.5	5	45.79	45.58
1007.6	5	45.832	45.62
1007.7	5	45.873	45.66
1007.8	5	45.915	45.7

1007.9	5	45.978	45.74
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1008.2	5	46.125	45.905
1008.3	5	46.167	45.975
1008.4	5	46.23	46.045
1008.5	5	46.271	46.115
1008.6	5	46.313	46.185
1008.7	5	46.376	46.255
1008.8	5	46.418	46.325
1008.9	5	46.46	46.395
1009	5	46.523	46.465
1009.1	5	46.565	46.52
1009.2	5	46.607	46.56
1009.3	5	46.669	46.6
1009.4	5	46.711	46.64
1009.5	5	46.753	46.68
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1009.8	5	46.9	46.8
1009.9	5	46.963	46.84
1010	5	47.005	46.88
1010.1	5	47.047	46.915
1010.2	5	47.109	46.945
1010.3	5	47.151	46.975
1010.4	5	47.193	47.005
1010.5	5	47.235	47.035
1010.6	5	47.277	47.065
1010.7	5	47.34	47.095
1010.8	5	47.382	47.125
1010.9	5	47.424	47.155
1011	5	47.465	47.185
1011.1	5	47.507	47.21
1011.2	5	47.528	47.23
1011.3	5	47.57	47.25
1011.4	5	47.612	47.27
1011.5	5	47.612	47.29
1011.6	5	47.633	47.31
1011.7	5	47.654	47.33
1011.8	5	47.675	47.35
1011.9	5	47.675	47.37
1012	5	47.675	47.39
1012.1	5	47.696	47.395
1012.2	5	47.696	47.385
1012.3	5	47.696	47.375

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1013.7	5	47.298	47.3
1013.8	5	47.256	47.3
1013.9	5	47.235	47.3
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1014.2	5	47.172	47.285
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1015.2	5	47.047	47.2
1015.3	5	47.026	47.2
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1015.7	5	46.984	47.2
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1016.8	5	46.858	47.2

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1017.7	5	46.879	47.135
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1018	5	46.9	47.105
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1018.8	5	46.921	47.025
1018.9	5	46.921	47.015
1019	5	46.942	47.005
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1019.3	5	46.942	47
1019.4	5	46.942	47
1019.5	5	46.963	47
1019.6	5	46.963	47
1019.7	5	46.963	47
1019.8	5	46.963	47
1019.9	5	46.984	47
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1020.8	5	47.026	46.925
1020.9	5	47.026	46.915
1021	5	47.026	46.905
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1021.2	5	47.026	46.885
1021.3	5	47.047	46.875



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1021.6	5	47.067	46.845
1021.7	5	47.067	46.835
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1021.9	5	47.067	46.815
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1022.5	5	47.088	46.845
1022.6	5	47.109	46.855
1022.7	5	47.109	46.865
1022.8	5	47.13	46.875
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1023	5	47.13	46.895
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1023.6	5	47.193	46.955
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1023.9	5	47.235	46.985
1024	5	47.256	46.995
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1025.8	5	47.78	47.425

1025.9	5	47.822	47.455
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1026.1	5	47.926	47.52
1026.2	5	47.968	47.56
1026.3	5	48.01	47.6
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1026.5	5	48.094	47.68
1026.6	5	48.136	47.72
1026.7	5	48.178	47.76
1026.8	5	48.22	47.8
1026.9	5	48.261	47.84
1027	5	48.303	47.88
1027.1	5	48.345	47.905
1027.2	5	48.408	47.915
1027.3	5	48.45	47.925
1027.4	5	48.492	47.935
1027.5	5	48.534	47.945
1027.6	5	48.576	47.955
1027.7	5	48.618	47.965
1027.8	5	48.659	47.975
1027.9	5	48.68	47.985
1028	5	48.701	47.995
1028.1	5	48.722	48
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1028.5	5	48.68	48
1028.6	5	48.659	48
1028.7	5	48.618	48
1028.8	5	48.576	48
1028.9	5	48.534	48
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1029.1	5	48.45	48
1029.2	5	48.387	48
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1029.9	5	48.136	48
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1030.3	5	48.136	48

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1030.8	5	48.178	48
1030.9	5	48.178	48
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1031.8	5	48.261	48
1031.9	5	48.282	48
1032	5	48.282	48
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1032.2	5	48.261	48.015
1032.3	5	48.261	48.025
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1032.7	5	48.24	48.065
1032.8	5	48.24	48.075
1032.9	5	48.22	48.085
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1033.1	5	48.22	48.105
1033.2	5	48.22	48.115
1033.3	5	48.199	48.125
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1033.5	5	48.22	48.145
1033.6	5	48.22	48.155
1033.7	5	48.22	48.165
1033.8	5	48.22	48.175
1033.9	5	48.24	48.185
1034	5	48.24	48.195
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1034.6	5	48.261	48.2
1034.7	5	48.282	48.2
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1034.9	5	48.282	48.2
1035	5	48.303	48.2
1035.1	5	48.303	48.195
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1035.3	5	48.324	48.175
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1035.8	5	48.366	48.125
1035.9	5	48.366	48.115
1036	5	48.366	48.105
1036.1	5	48.366	48.125
1036.2	5	48.387	48.175
1036.3	5	48.387	48.225
1036.4	5	48.387	48.275
1036.5	5	48.408	48.325
1036.6	5	48.408	48.375
1036.7	5	48.408	48.425
1036.8	5	48.429	48.475
1036.9	5	48.429	48.528
1037	5	48.45	48.575
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1037.2	5	48.471	48.645
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1037.6	5	48.576	48.765
1037.7	5	48.597	48.795
1037.8	5	48.638	48.825
1037.9	5	48.659	48.855
1038	5	48.68	48.885
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1038.2	5	48.743	48.93
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1038.9	5	48.911	49.07
1039	5	48.953	49.09
1039.1	5	48.974	49.1
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1039.3	5	48.995	49.1

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1039.8	5	49.078	49.1
1039.9	5	49.099	49.1
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1040.8	5	49.246	49.1
1040.9	5	49.246	49.1
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1043.3	5	49.455	49.075
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1044	5	49.434	49.005
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1044.2	5	49.414	48.985
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1044.8	5	49.246	48.925
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1046	5	48.513	48.235
1046.1	5	48.45	48.175
1046.2	5	48.387	48.125
1046.3	5	48.324	48.075
1046.4	5	48.261	48.025
1046.5	5	48.199	47.975
1046.6	5	48.136	47.925
1046.7	5	48.073	47.875
1046.8	5	48.01	47.825
1046.9	5	47.947	47.775
1047	5	47.884	47.725
1047.1	5	47.842	47.69
1047.2	5	47.801	47.67
1047.3	5	47.759	47.65
1047.4	5	47.717	47.63
1047.5	5	47.654	47.61
1047.6	5	47.633	47.59
1047.7	5	47.57	47.57
1047.8	5	47.528	47.55
1047.9	5	47.486	47.53
1048	5	47.445	47.51
1048.1	5	47.424	47.485
1048.2	5	47.403	47.455
1048.3	5	47.382	47.425

1048.4	5	47.361	47.395
1048.5	5	47.34	47.365
1048.6	5	47.319	47.335
1048.7	5	47.298	47.305
1048.8	5	47.277	47.275
1048.9	5	47.256	47.245
1049	5	47.256	47.215
1049.1	5	47.235	47.175
1049.2	5	47.214	47.125
1049.3	5	47.193	47.075
1049.4	5	47.193	47.025
1049.5	5	47.172	46.975
1049.6	5	47.172	46.925
1049.7	5	47.13	46.875
1049.8	5	47.088	46.825
1049.9	5	47.067	46.775
1050	5	47.047	46.725
1050.1	5	47.047	46.675
1050.2	5	46.984	46.625
1050.3	5	46.942	46.575
1050.4	5	46.921	46.525
1050.5	5	46.921	46.475
1050.6	5	46.879	46.425
1050.7	5	46.816	46.375
1050.8	5	46.753	46.325
1050.9	5	46.753	46.275
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1051.2	5	46.565	46.17
1051.3	5	46.523	46.15
1051.4	5	46.523	46.13
1051.5	5	46.481	46.11
1051.6	5	46.418	46.09
1051.7	5	46.376	46.07
1051.8	5	46.376	46.05
1051.9	5	46.355	46.03
1052	5	46.334	46.01
1052.1	5	46.292	45.99
1052.2	5	46.292	45.97
1052.3	5	46.271	45.95
1052.4	5	46.271	45.93
1052.5	5	46.271	45.91
1052.6	5	46.251	45.89
1052.7	5	46.251	45.87
1052.8	5	46.251	45.85

1052.9	5	46.251	45.83
1053	5	46.251	45.81
1053.1	5	46.251	45.79
1053.2	5	46.23	45.77
1053.3	5	46.23	45.75
1053.4	5	46.23	45.73
1053.5	5	46.23	45.71
1053.6	5	46.23	45.69
1053.7	5	46.209	45.67
1053.8	5	46.209	45.65
1053.9	5	46.188	45.63
1054	5	46.188	45.61
1054.1	5	46.167	45.59
1054.2	5	46.146	45.57
1054.3	5	46.125	45.55
1054.4	5	46.125	45.53
1054.5	5	46.104	45.51
1054.6	5	46.083	45.49
1054.7	5	46.083	45.47
1054.8	5	46.062	45.45
1054.9	5	46.062	45.43
1055	5	46.041	45.41
1055.1	5	46.041	45.39
1055.2	5	46.041	45.37
1055.3	5	46.02	45.35
1055.4	5	46.02	45.33
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1055.7	5	45.978	45.27
1055.8	5	45.936	45.25
1055.9	5	45.894	45.23
1056	5	45.853	45.21
1056.1	5	45.811	45.19
1056.2	5	45.769	45.17
1056.3	5	45.706	45.15
1056.4	5	45.706	45.13
1056.5	5	45.622	45.11
1056.6	5	45.559	45.09
1056.7	5	45.517	45.07
1056.8	5	45.476	45.05
1056.9	5	45.413	45.03
1057	5	45.392	45.01
1057.1	5	45.35	44.985
1057.2	5	45.308	44.955
1057.3	5	45.266	44.925



1057.4	5	45.245	44.895
1057.5	5	45.224	44.865
1057.6	5	45.182	44.835
1057.7	5	45.161	44.805
1057.8	5	45.14	44.775
1057.9	5	45.098	44.745
1058	5	45.078	44.715
1058.1	5	45.036	44.69
1058.2	5	45.015	44.67
1058.3	5	44.973	44.65
1058.4	5	44.952	44.63
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1058.9	5	44.784	44.53
1059	5	44.763	44.51
1059.1	5	44.742	44.485
1059.2	5	44.721	44.455
1059.3	5	44.721	44.425
1059.4	5	44.68	44.395
1059.5	5	44.659	44.365
1059.6	5	44.638	44.335
1059.7	5	44.638	44.305
1059.8	5	44.617	44.275
1059.9	5	44.575	44.245
1060	5	44.554	44.215
1060.1	5	44.512	44.165
1060.2	5	44.512	44.095
1060.3	5	44.491	44.025
1060.4	5	44.428	43.955
1060.5	5	44.386	43.885
1060.6	5	44.386	43.815
1060.7	5	44.323	43.745
1060.8	5	44.219	43.675
1060.9	5	44.177	43.605
1061	5	44.177	43.535
1061.1	5	44.114	43.465
1061.2	5	44.051	43.395
1061.3	5	43.925	43.325
1061.4	5	43.884	43.255
1061.5	5	43.884	43.185
1061.6	5	43.821	43.115
1061.7	5	43.758	43.045
1061.8	5	43.632	42.975

1061.9	5	43.632	42.905
1062	5	43.569	42.835
1062.1	5	43.486	42.76
1062.2	5	43.339	42.68
1062.3	5	43.339	42.6
1062.4	5	43.276	42.52
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1062.6	5	43.129	42.36
1062.7	5	43.046	42.28
1062.8	5	42.983	42.2
1062.9	5	42.899	42.12
1063	5	42.815	42.04
1063.1	5	42.752	41.905
1063.2	5	42.69	41.715
1063.3	5	42.606	41.525
1063.4	5	42.543	41.335
1063.5	5	42.438	41.145
1063.6	5	42.354	40.955
1063.7	5	42.25	40.765
1063.8	5	42.103	40.575
1063.9	5	41.894	40.385
1064	5	41.663	40.195
1064.1	5	41.433	40.025
1064.2	5	41.181	39.875
1064.3	5	40.951	39.725
1064.4	5	40.721	39.575
1064.5	5	40.49	39.425
1064.6	5	40.26	39.275
1064.7	5	40.029	39.125
1064.8	5	39.799	38.975
1064.9	5	39.569	38.825
1065	5	39.338	38.675
1065.1	5	39.129	38.545
1065.2	5	38.898	38.435
1065.3	5	38.689	38.325
1065.4	5	38.458	38.215
1065.5	5	38.291	38.105
1065.6	5	38.165	37.995
1065.7	5	38.06	37.885
1065.8	5	37.956	37.775
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1066.1	5	37.6	37.415
1066.2	5	37.495	37.245
1066.3	5	37.39	37.075

1066.4	5	37.306	36.905
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1066.6	5	37.076	36.565
1066.7	5	36.95	36.395
1066.8	5	36.824	36.225
1066.9	5	36.699	36.055
1067	5	36.552	35.885
1067.1	5	36.426	35.745
1067.2	5	36.28	35.635
1067.3	5	36.154	35.525
1067.4	5	36.008	35.415
1067.5	5	35.882	35.305
1067.6	5	35.735	35.195
1067.7	5	35.61	35.085
1067.8	5	35.484	34.975
1067.9	5	35.358	34.865
1068	5	35.233	34.755
1068.1	5	35.107	34.665
1068.2	5	34.981	34.595
1068.3	5	34.876	34.525
1068.4	5	34.876	34.455
1068.5	5	34.625	34.385
1068.6	5	34.52	34.315
1068.7	5	34.437	34.245
1068.8	5	34.437	34.175
1068.9	5	34.269	34.105
1069	5	34.185	34.035
1069.1	5	34.101	33.965
1069.2	5	34.018	33.895
1069.3	5	34.018	33.825
1069.4	5	33.871	33.755
1069.5	5	33.787	33.685
1069.6	5	33.724	33.615
1069.7	5	33.724	33.545
1069.8	5	33.641	33.475
1069.9	5	33.494	33.405
1070	5	33.41	33.335
1070.1	5	33.41	33.26
1070.2	5	33.326	33.18
1070.3	5	33.18	33.1
1070.4	5	33.096	33.02
1070.5	5	33.096	32.94
1070.6	5	33.033	32.86
1070.7	5	32.949	32.78
1070.8	5	32.803	32.7

1070.9	5	32.719	32.62
1071	5	32.719	32.54
1071.1	5	32.635	32.46
1071.2	5	32.572	32.38
1071.3	5	32.426	32.3
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1071.6	5	32.258	32.06
1071.7	5	32.195	31.98
1071.8	5	32.049	31.9
1071.9	5	32.049	31.82
1072	5	31.965	31.74
1072.1	5	31.881	31.645
1072.2	5	31.734	31.535
1072.3	5	31.734	31.425
1072.4	5	31.672	31.315
1072.5	5	31.588	31.205
1072.6	5	31.504	31.095
1072.7	5	31.441	30.985
1072.8	5	31.357	30.875
1072.9	5	31.274	30.765
1073	5	31.211	30.655
1073.1	5	31.127	30.55
1073.2	5	31.064	30.45
1073.3	5	30.98	30.35
1073.4	5	30.897	30.25
1073.5	5	30.813	30.15
1073.6	5	30.729	30.05
1073.7	5	30.645	29.95
1073.8	5	30.561	29.85
1073.9	5	30.478	29.75
1074	5	30.373	29.65
1074.1	5	30.268	29.56
1074.2	5	30.142	29.48
1074.3	5	30.038	29.4
1074.4	5	29.912	29.32
1074.5	5	29.807	29.24
1074.6	5	29.682	29.16
1074.7	5	29.598	29.08
1074.8	5	29.514	29
1074.9	5	29.409	28.92
1075	5	29.326	28.84
1075.1	5	29.242	28.78
1075.2	5	29.137	28.74
1075.3	5	29.074	28.7

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1075.5	5	28.907	28.62
1075.6	5	28.823	28.58
1075.7	5	28.739	28.54
1075.8	5	28.655	28.5
1075.9	5	28.571	28.46
1076	5	28.488	28.42
1076.1	5	28.404	28.41
1076.2	5	28.32	28.43
1076.3	5	28.257	28.45
1076.4	5	28.215	28.47
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1076.6	5	28.194	28.51
1076.7	5	28.215	28.53
1076.8	5	28.257	28.55
1076.9	5	28.299	28.57
1077	5	28.383	28.59
1077.1	5	28.488	28.645
1077.2	5	28.613	28.735
1077.3	5	28.739	28.825
1077.4	5	28.886	28.915
1077.5	5	29.053	29.005
1077.6	5	29.221	29.095
1077.7	5	29.388	29.185
1077.8	5	29.535	29.275
1077.9	5	29.703	29.365
1078	5	29.703	29.455
1078.1	5	30.017	29.595
1078.2	5	30.163	29.785
1078.3	5	30.331	29.975
1078.4	5	30.478	30.165
1078.5	5	30.478	30.355
1078.6	5	30.813	30.545
1078.7	5	30.98	30.735
1078.8	5	31.148	30.925
1078.9	5	31.148	31.115
1079	5	31.336	31.305
1079.1	5	31.693	31.5
1079.2	5	31.86	31.7
1079.3	5	31.86	31.9
1079.4	5	32.049	32.1
1079.5	5	32.405	32.3
1079.6	5	32.572	32.5
1079.7	5	32.74	32.7
1079.8	5	32.74	32.9

1079.9	5	32.928	33.1
1080	5	33.284	33.3
1080.1	5	33.452	33.51
1080.2	5	33.452	33.73
1080.3	5	33.62	33.95
1080.4	5	33.787	34.17
1080.5	5	34.122	34.39
1080.6	5	34.29	34.61
1080.7	5	34.29	34.83
1080.8	5	34.437	35.05
1080.9	5	34.583	35.27
1081	5	34.876	35.49
1081.1	5	34.876	35.695
1081.2	5	35.023	35.885
1081.3	5	35.17	36.075
1081.4	5	35.316	36.265
1081.5	5	35.442	36.455
1081.6	5	35.568	36.645
1081.7	5	35.672	36.835
1081.8	5	35.756	37.025
1081.9	5	35.861	37.215
1082	5	35.945	37.405
1082.1	5	36.028	37.58
1082.2	5	36.112	37.74
1082.3	5	36.196	37.9
1082.4	5	36.196	38.06
1082.5	5	36.406	38.22
1082.6	5	36.51	38.38
1082.7	5	36.615	38.54
1082.8	5	36.741	38.7
1082.9	5	36.824	38.86
1083	5	36.929	39.02
1083.1	5	37.034	39.155
1083.2	5	37.139	39.265
1083.3	5	37.243	39.375
1083.4	5	37.348	39.485
1083.5	5	37.516	39.595
1083.6	5	37.704	39.705
1083.7	5	37.914	39.815
1083.8	5	38.123	39.925
1083.9	5	38.375	40.035
1084	5	38.605	40.145
1084.1	5	38.835	40.245
1084.2	5	39.087	40.335
1084.3	5	39.317	40.425

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1084.5	5	39.778	40.605
1084.6	5	40.008	40.695
1084.7	5	40.239	40.785
1084.8	5	40.406	40.875
1084.9	5	40.553	40.965
1085	5	40.658	41.055
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1085.7	5	41.391	41.555
1085.8	5	41.475	41.625
1085.9	5	41.558	41.695
1086	5	41.642	41.765
1086.1	5	41.705	41.83
1086.2	5	41.789	41.89
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1086.4	5	41.935	42.01
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1086.7	5	42.166	42.19
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1086.9	5	42.313	42.31
1087	5	42.375	42.37
1087.1	5	42.459	42.42
1087.2	5	42.522	42.46
1087.3	5	42.522	42.5
1087.4	5	42.69	42.54
1087.5	5	42.773	42.58
1087.6	5	42.836	42.62
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1087.8	5	42.92	42.7
1087.9	5	43.088	42.74
1088	5	43.171	42.78
1088.1	5	43.255	42.825
1088.2	5	43.255	42.875
1088.3	5	43.423	42.925
1088.4	5	43.507	42.975
1088.5	5	43.59	43.025
1088.6	5	43.59	43.075
1088.7	5	43.674	43.125
1088.8	5	43.842	43.175

1088.9	5	43.925	43.225
1089	5	43.925	43.275
1089.1	5	43.988	43.325
1089.2	5	44.03	43.375
1089.3	5	44.114	43.425
1089.4	5	44.135	43.475
1089.5	5	44.135	43.525
1089.6	5	44.177	43.575
1089.7	5	44.24	43.625
1089.8	5	44.282	43.675
1089.9	5	44.282	43.725
1090	5	44.323	43.775
1090.1	5	44.344	43.825
1090.2	5	44.407	43.875
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1090.8	5	44.47	44.175
1090.9	5	44.449	44.225
1091	5	44.428	44.275
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1091.7	5	44.449	44.56
1091.8	5	44.449	44.6
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1092	5	44.449	44.68
1092.1	5	44.428	44.715
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1093	5	44.282	44.985
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1093.9	5	44.617	45.17
1094	5	44.68	45.19
1094.1	5	44.721	45.21
1094.2	5	44.763	45.23
1094.3	5	44.826	45.25
1094.4	5	44.868	45.27
1094.5	5	44.91	45.29
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1094.8	5	44.994	45.35
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1095	5	45.036	45.39
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1095.2	5	45.098	45.415
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1095.6	5	45.203	45.455
1095.7	5	45.224	45.465
1095.8	5	45.266	45.475
1095.9	5	45.308	45.485
1096	5	45.35	45.495
1096.1	5	45.392	45.515
1096.2	5	45.413	45.545
1096.3	5	45.476	45.575
1096.4	5	45.496	45.605
1096.5	5	45.538	45.635
1096.6	5	45.58	45.665
1096.7	5	45.622	45.695
1096.8	5	45.643	45.725
1096.9	5	45.685	45.755
1097	5	45.685	45.785
1097.1	5	45.748	45.81
1097.2	5	45.79	45.83
1097.3	5	45.811	45.85
1097.4	5	45.811	45.87
1097.5	5	45.832	45.89
1097.6	5	45.873	45.91
1097.7	5	45.894	45.93
1097.8	5	45.915	45.95

1097.9	5	45.915	45.97
1098	5	45.957	45.99
1098.1	5	45.978	46.005
1098.2	5	45.999	46.015
1098.3	5	45.999	46.025
1098.4	5	46.02	46.035
1098.5	5	46.062	46.045
1098.6	5	46.062	46.055
1098.7	5	46.062	46.065
1098.8	5	46.083	46.075
1098.9	5	46.104	46.085
1099	5	46.146	46.095
1099.1	5	46.167	46.12
1099.2	5	46.167	46.16
1099.3	5	46.188	46.2
1099.4	5	46.209	46.24
1099.5	5	46.23	46.28
1099.6	5	46.23	46.32
1099.7	5	46.251	46.36
1099.8	5	46.271	46.4
1099.9	5	46.292	46.44
1100	5	46.334	46.48
1100.1	5	46.334	46.515
1100.2	5	46.355	46.545
1100.3	5	46.376	46.575
1100.4	5	46.397	46.605
1100.5	5	46.418	46.635
1100.6	5	46.418	46.665
1100.7	5	46.439	46.695
1100.8	5	46.46	46.725
1100.9	5	46.481	46.755
1101	5	46.502	46.785
1101.1	5	46.523	46.815
1101.2	5	46.544	46.845
1101.3	5	46.565	46.875
1101.4	5	46.586	46.905
1101.5	5	46.607	46.935
1101.6	5	46.649	46.965
1101.7	5	46.669	46.995
1101.8	5	46.711	47.025
1101.9	5	46.753	47.055
1102	5	46.795	47.085
1102.1	5	46.837	47.13
1102.2	5	46.9	47.19
1102.3	5	46.942	47.25

1102.4	5	46.984	47.31
1102.5	5	47.047	47.37
1102.6	5	47.088	47.43
1102.7	5	47.13	47.49
1102.8	5	47.193	47.55
1102.9	5	47.235	47.61
1103	5	47.298	47.67
1103.1	5	47.361	47.73
1103.2	5	47.424	47.79
1103.3	5	47.486	47.85
1103.4	5	47.549	47.91
1103.5	5	47.612	47.97
1103.6	5	47.675	48.03
1103.7	5	47.759	48.09
1103.8	5	47.822	48.15
1103.9	5	47.884	48.21
1104	5	47.947	48.27
1104.1	5	48.031	48.335
1104.2	5	48.094	48.405
1104.3	5	48.178	48.475
1104.4	5	48.24	48.545
1104.5	5	48.324	48.615
1104.6	5	48.387	48.685
1104.7	5	48.471	48.755
1104.8	5	48.534	48.825
1104.9	5	48.597	48.895
1105	5	48.659	48.965
1105.1	5	48.743	49.035
1105.2	5	48.806	49.105
1105.3	5	48.869	49.175
1105.4	5	48.932	49.245
1105.5	5	48.995	49.315
1105.6	5	49.057	49.385
1105.7	5	49.099	49.455
1105.8	5	49.162	49.525
1105.9	5	49.225	49.595
1106	5	49.288	49.665
1106.1	5	49.33	49.73
1106.2	5	49.393	49.79
1106.3	5	49.393	49.85
1106.4	5	49.518	49.91
1106.5	5	49.581	49.97
1106.6	5	49.644	50.03
1106.7	5	49.644	50.09
1106.8	5	49.707	50.15

1106.9	5	49.832	50.21
1107	5	49.895	50.27
1107.1	5	49.979	50.335
1107.2	5	49.979	50.405
1107.3	5	50.042	50.475
1107.4	5	50.189	50.545
1107.5	5	50.251	50.615
1107.6	5	50.251	50.685
1107.7	5	50.335	50.755
1107.8	5	50.482	50.825
1107.9	5	50.545	50.895
1108	5	50.545	50.965
1108.1	5	50.628	51.035
1108.2	5	50.691	51.105
1108.3	5	50.775	51.175
1108.4	5	50.922	51.245
1108.5	5	50.922	51.315
1108.6	5	50.985	51.385
1108.7	5	51.068	51.455
1108.8	5	51.194	51.525
1108.9	5	51.194	51.595
1109	5	51.278	51.665
1109.1	5	51.341	51.735
1109.2	5	51.403	51.805
1109.3	5	51.55	51.875
1109.4	5	51.55	51.945
1109.5	5	51.634	52.015
1109.6	5	51.697	52.085
1109.7	5	51.822	52.155
1109.8	5	51.822	52.225
1109.9	5	51.906	52.295
1110	5	51.969	52.365
1110.1	5	52.032	52.435
1110.2	5	52.095	52.505
1110.3	5	52.178	52.575
1110.4	5	52.241	52.645
1110.5	5	52.304	52.715
1110.6	5	52.388	52.785
1110.7	5	52.451	52.855
1110.8	5	52.535	52.925
1110.9	5	52.618	52.995
1111	5	52.681	53.065
1111.1	5	52.765	53.135
1111.2	5	52.828	53.205
1111.3	5	52.912	53.275

1111.4	5	52.995	53.345
1111.5	5	53.058	53.415
1111.6	5	53.142	53.485
1111.7	5	53.226	53.555
1111.8	5	53.289	53.625
1111.9	5	53.372	53.695
1112	5	53.435	53.765
1112.1	5	53.498	53.835
1112.2	5	53.582	53.905
1112.3	5	53.645	53.975
1112.4	5	53.708	54.045
1112.5	5	53.77	54.115
1112.6	5	53.812	54.185
1112.7	5	53.875	54.255
1112.8	5	53.938	54.325
1112.9	5	54.001	54.395
1113	5	54.064	54.465
1113.1	5	54.106	54.535
1113.2	5	54.168	54.605
1113.3	5	54.231	54.675
1113.4	5	54.294	54.745
1113.5	5	54.357	54.815
1113.6	5	54.42	54.885
1113.7	5	54.483	54.955
1113.8	5	54.545	55.025
1113.9	5	54.608	55.095
1114	5	54.671	55.165
1114.1	5	54.713	55.23
1114.2	5	54.776	55.29
1114.3	5	54.839	55.35
1114.4	5	54.902	55.41
1114.5	5	54.964	55.47
1114.6	5	55.027	55.53
1114.7	5	55.069	55.59
1114.8	5	55.132	55.65
1114.9	5	55.195	55.71
1115	5	55.258	55.77
1115.1	5	55.32	55.83
1115.2	5	55.383	55.89
1115.3	5	55.467	55.95
1115.4	5	55.53	56.01
1115.5	5	55.593	56.07
1115.6	5	55.677	56.13
1115.7	5	55.739	56.19
1115.8	5	55.823	56.25

1115.9	5	55.823	56.31
1116	5	55.97	56.37
1116.1	5	56.033	56.425
1116.2	5	56.116	56.475
1116.3	5	56.116	56.525
1116.4	5	56.179	56.575
1116.5	5	56.284	56.625
1116.6	5	56.347	56.675
1116.7	5	56.41	56.725
1116.8	5	56.41	56.775
1116.9	5	56.473	56.825
1117	5	56.577	56.875
1117.1	5	56.64	56.905
1117.2	5	56.64	56.915
1117.3	5	56.682	56.925
1117.4	5	56.724	56.935
1117.5	5	56.829	56.945
1117.6	5	56.871	56.955
1117.7	5	56.871	56.965
1117.8	5	56.933	56.975
1117.9	5	57.017	56.985
1118	5	57.08	56.995
1118.1	5	57.08	57.005
1118.2	5	57.122	57.015
1118.3	5	57.164	57.025
1118.4	5	57.269	57.035
1118.5	5	57.269	57.045
1118.6	5	57.31	57.055
1118.7	5	57.352	57.065
1118.8	5	57.415	57.075
1118.9	5	57.499	57.085
1119	5	57.499	57.095
1119.1	5	57.541	57.11
1119.2	5	57.583	57.13
1119.3	5	57.687	57.15
1119.4	5	57.687	57.17
1119.5	5	57.729	57.19
1119.6	5	57.771	57.21
1119.7	5	57.813	57.23
1119.8	5	57.855	57.25
1119.9	5	57.897	57.27
1120	5	57.939	57.29
1120.1	5	57.96	57.315
1120.2	5	58.002	57.345
1120.3	5	58.044	57.375

1120.4	5	58.085	57.405
1120.5	5	58.106	57.435
1120.6	5	58.148	57.465
1120.7	5	58.19	57.495
1120.8	5	58.211	57.525
1120.9	5	58.232	57.555
1121	5	58.253	57.585
1121.1	5	58.274	57.61
1121.2	5	58.295	57.63
1121.3	5	58.295	57.65
1121.4	5	58.316	57.67
1121.5	5	58.337	57.69
1121.6	5	58.337	57.71
1121.7	5	58.358	57.73
1121.8	5	58.379	57.75
1121.9	5	58.379	57.77
1122	5	58.4	57.79
1122.1	5	58.421	57.81
1122.2	5	58.442	57.83
1122.3	5	58.463	57.85
1122.4	5	58.504	57.87
1122.5	5	58.525	57.89
1122.6	5	58.567	57.91
1122.7	5	58.588	57.93
1122.8	5	58.63	57.95
1122.9	5	58.672	57.97
1123	5	58.693	57.99
1123.1	5	58.714	58.005
1123.2	5	58.756	58.015
1123.3	5	58.777	58.025
1123.4	5	58.819	58.035
1123.5	5	58.84	58.045
1123.6	5	58.881	58.055
1123.7	5	58.902	58.065
1123.8	5	58.923	58.075
1123.9	5	58.965	58.085
1124	5	58.986	58.095
1124.1	5	59.007	58.115
1124.2	5	59.028	58.145
1124.3	5	59.07	58.175
1124.4	5	59.091	58.205
1124.5	5	59.112	58.235
1124.6	5	59.154	58.265
1124.7	5	59.175	58.295
1124.8	5	59.196	58.325

1124.9	5	59.238	58.355
1125	5	59.238	58.385
1125.1	5	59.279	58.415
1125.2	5	59.321	58.445
1125.3	5	59.342	58.475
1125.4	5	59.342	58.505
1125.5	5	59.384	58.535
1125.6	5	59.405	58.565
1125.7	5	59.405	58.595
1125.8	5	59.405	58.625
1125.9	5	59.405	58.655
1126	5	59.405	58.685
1126.1	5	59.384	58.705
1126.2	5	59.384	58.715
1126.3	5	59.384	58.725
1126.4	5	59.363	58.735
1126.5	5	59.321	58.745
1126.6	5	59.3	58.755
1126.7	5	59.3	58.765
1126.8	5	59.279	58.775
1126.9	5	59.238	58.785
1127	5	59.217	58.795
1127.1	5	59.217	58.805
1127.2	5	59.196	58.815
1127.3	5	59.175	58.825
1127.4	5	59.154	58.835
1127.5	5	59.133	58.845
1127.6	5	59.133	58.855
1127.7	5	59.112	58.865
1127.8	5	59.091	58.875
1127.9	5	59.091	58.885
1128	5	59.091	58.895
1128.1	5	59.091	58.905
1128.2	5	59.091	58.915
1128.3	5	59.091	58.925
1128.4	5	59.112	58.935
1128.5	5	59.112	58.945
1128.6	5	59.112	58.955
1128.7	5	59.112	58.965
1128.8	5	59.112	58.975
1128.9	5	59.112	58.985
1129	5	59.091	58.995
1129.1	5	59.091	59
1129.2	5	59.07	59
1129.3	5	59.07	59



1129.4	5	59.049	59
1129.5	5	59.049	59
1129.6	5	59.028	59
1129.7	5	59.007	59
1129.8	5	58.986	59
1129.9	5	58.965	59
1130	5	58.944	59
1130.1	5	58.923	58.995
1130.2	5	58.902	58.985
1130.3	5	58.881	58.975
1130.4	5	58.84	58.965
1130.5	5	58.819	58.955
1130.6	5	58.798	58.945
1130.7	5	58.756	58.935
1130.8	5	58.735	58.925
1130.9	5	58.693	58.915
1131	5	58.672	58.905
1131.1	5	58.63	58.895
1131.2	5	58.609	58.885
1131.3	5	58.567	58.875
1131.4	5	58.546	58.865
1131.5	5	58.504	58.855
1131.6	5	58.483	58.845
1131.7	5	58.442	58.835
1131.8	5	58.421	58.825
1131.9	5	58.379	58.815
1132	5	58.337	58.805
1132.1	5	58.337	58.79
1132.2	5	58.316	58.77
1132.3	5	58.316	58.75
1132.4	5	58.295	58.73
1132.5	5	58.295	58.71
1132.6	5	58.295	58.69
1132.7	5	58.274	58.67
1132.8	5	58.274	58.65
1132.9	5	58.274	58.63
1133	5	58.274	58.61
1133.1	5	58.274	58.59
1133.2	5	58.253	58.57
1133.3	5	58.253	58.55
1133.4	5	58.274	58.53
1133.5	5	58.274	58.51
1133.6	5	58.274	58.49
1133.7	5	58.274	58.47
1133.8	5	58.295	58.45

1133.9	5	58.295	58.43
1134	5	58.274	58.41
1134.1	5	58.274	58.39
1134.2	5	58.253	58.37
1134.3	5	58.253	58.35
1134.4	5	58.232	58.33
1134.5	5	58.19	58.31
1134.6	5	58.19	58.29
1134.7	5	58.148	58.27
1134.8	5	58.106	58.25
1134.9	5	58.065	58.23
1135	5	58.065	58.21
1135.1	5	58.044	58.195
1135.2	5	57.96	58.185
1135.3	5	57.939	58.175
1135.4	5	57.897	58.165
1135.5	5	57.897	58.155
1135.6	5	57.855	58.145
1135.7	5	57.75	58.135
1135.8	5	57.708	58.125
1135.9	5	57.708	58.115
1136	5	57.646	58.105
1136.1	5	57.52	58.095
1136.2	5	57.457	58.085
1136.3	5	57.394	58.075
1136.4	5	57.394	58.065
1136.5	5	57.331	58.055
1136.6	5	57.206	58.045
1136.7	5	57.164	58.035
1136.8	5	57.164	58.025
1136.9	5	57.101	58.015
1137	5	57.059	58.005
1137.1	5	56.996	57.995
1137.2	5	56.975	57.985
1137.3	5	56.975	57.975
1137.4	5	56.975	57.965
1137.5	5	56.975	57.955
1137.6	5	56.996	57.945
1137.7	5	56.996	57.935
1137.8	5	57.017	57.925
1137.9	5	57.038	57.915
1138	5	57.059	57.905
1138.1	5	57.059	57.885
1138.2	5	57.08	57.855
1138.3	5	57.101	57.825

1138.4	5	57.122	57.795
1138.5	5	57.143	57.765
1138.6	5	57.143	57.735
1138.7	5	57.143	57.705
1138.8	5	57.143	57.675
1138.9	5	57.143	57.645
1139	5	57.122	57.615
1139.1	5	57.122	57.59
1139.2	5	57.101	57.57
1139.3	5	57.08	57.55
1139.4	5	57.08	57.53
1139.5	5	57.059	57.51
1139.6	5	57.038	57.49
1139.7	5	57.038	57.47
1139.8	5	57.017	57.45
1139.9	5	56.996	57.43
1140	5	56.975	57.41
1140.1	5	56.954	57.39
1140.2	5	56.933	57.37
1140.3	5	56.933	57.35
1140.4	5	56.912	57.33
1140.5	5	56.892	57.31
1140.6	5	56.892	57.29
1140.7	5	56.871	57.27
1140.8	5	56.871	57.25
1140.9	5	56.85	57.23
1141	5	56.85	57.21
1141.1	5	56.85	57.195
1141.2	5	56.829	57.185
1141.3	5	56.829	57.175
1141.4	5	56.829	57.165
1141.5	5	56.829	57.155
1141.6	5	56.829	57.145
1141.7	5	56.808	57.135
1141.8	5	56.808	57.125
1141.9	5	56.808	57.115
1142	5	56.808	57.105
1142.1	5	56.808	57.095
1142.2	5	56.808	57.085
1142.3	5	56.808	57.075
1142.4	5	56.808	57.065
1142.5	5	56.808	57.055
1142.6	5	56.808	57.045
1142.7	5	56.808	57.035
1142.8	5	56.808	57.025

1142.9	5	56.808	57.015
1143	5	56.808	57.005
1143.1	5	56.808	57
1143.2	5	56.829	57
1143.3	5	56.829	57
1143.4	5	56.85	57
1143.5	5	56.871	57
1143.6	5	56.871	57
1143.7	5	56.892	57
1143.8	5	56.892	57
1143.9	5	56.912	57
1144	5	56.933	57
1144.1	5	56.954	56.995
1144.2	5	56.975	56.985
1144.3	5	56.975	56.975
1144.4	5	56.996	56.965
1144.5	5	57.017	56.955
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1144.7	5	57.038	56.935
1144.8	5	57.059	56.925
1144.9	5	57.101	56.915
1145	5	57.101	56.905
1145.1	5	57.101	56.9
1145.2	5	57.122	56.9
1145.3	5	57.164	56.9
1145.4	5	57.185	56.9
1145.5	5	57.185	56.9
1145.6	5	57.185	56.9
1145.7	5	57.206	56.9
1145.8	5	57.248	56.9
1145.9	5	57.269	56.9
1146	5	57.269	56.9
1146.1	5	57.269	56.9
1146.2	5	57.29	56.9
1146.3	5	57.269	56.9
1146.4	5	57.269	56.9
1146.5	5	57.269	56.9
1146.6	5	57.269	56.9
1146.7	5	57.248	56.9
1146.8	5	57.227	56.9
1146.9	5	57.227	56.9
1147	5	57.206	56.9
1147.1	5	57.206	56.905
1147.2	5	57.185	56.915
1147.3	5	57.185	56.925

1147.4	5	57.185	56.935
1147.5	5	57.185	56.945
1147.6	5	57.185	56.955
1147.7	5	57.206	56.965
1147.8	5	57.206	56.975
1147.9	5	57.206	56.985
1148	5	57.206	56.995
1148.1	5	57.206	57
1148.2	5	57.227	57
1148.3	5	57.227	57
1148.4	5	57.227	57
1148.5	5	57.248	57
1148.6	5	57.248	57
1148.7	5	57.269	57
1148.8	5	57.29	57
1148.9	5	57.29	57
1149	5	57.31	57
1149.1	5	57.31	57
1149.2	5	57.331	57
1149.3	5	57.331	57
1149.4	5	57.352	57
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1149.8	5	57.415	57
1149.9	5	57.436	57
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1150.8	5	57.562	57
1150.9	5	57.583	57
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1151.4	5	57.646	57
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1151.8	5	57.667	57

1151.9	5	57.687	57
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1152.8	5	57.75	57
1152.9	5	57.75	57
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1153.1	5	57.708	57
1153.2	5	57.667	57
1153.3	5	57.604	57
1153.4	5	57.562	57
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1153.6	5	57.457	57
1153.7	5	57.394	57
1153.8	5	57.331	57
1153.9	5	57.29	57
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1154.8	5	57.185	57
1154.9	5	57.185	57
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1155.7	5	57.164	57
1155.8	5	57.143	57
1155.9	5	57.143	57
1156	5	57.122	57
1156.1	5	57.101	56.995
1156.2	5	57.101	56.985
1156.3	5	57.08	56.975

1156.4	5	57.08	56.965
1156.5	5	57.038	56.955
1156.6	5	57.038	56.945
1156.7	5	57.017	56.935
1156.8	5	56.996	56.925
1156.9	5	56.996	56.915
1157	5	56.954	56.905
1157.1	5	56.954	56.895
1157.2	5	56.933	56.885
1157.3	5	56.912	56.875
1157.4	5	56.892	56.865
1157.5	5	56.871	56.855
1157.6	5	56.85	56.845
1157.7	5	56.829	56.835
1157.8	5	56.808	56.825
1157.9	5	56.787	56.815
1158	5	56.766	56.805
1158.1	5	56.745	56.785
1158.2	5	56.724	56.755
1158.3	5	56.703	56.725
1158.4	5	56.682	56.695
1158.5	5	56.661	56.665
1158.6	5	56.64	56.635
1158.7	5	56.619	56.605
1158.8	5	56.598	56.575
1158.9	5	56.556	56.545
1159	5	56.535	56.515
1159.1	5	56.535	56.485
1159.2	5	56.514	56.455
1159.3	5	56.494	56.425
1159.4	5	56.452	56.395
1159.5	5	56.431	56.365
1159.6	5	56.41	56.335
1159.7	5	56.389	56.305
1159.8	5	56.368	56.275
1159.9	5	56.326	56.245
1160	5	56.305	56.215
1160.1	5	56.284	56.19
1160.2	5	56.242	56.17
1160.3	5	56.242	56.15
1160.4	5	56.2	56.13
1160.5	5	56.179	56.11
1160.6	5	56.137	56.09
1160.7	5	56.116	56.07
1160.8	5	56.096	56.05

1160.9	5	56.075	56.03
1161	5	56.054	56.01
1161.1	5	56.033	56
1161.2	5	56.012	56
1161.3	5	56.012	56
1161.4	5	55.991	56
1161.5	5	55.991	56
1161.6	5	55.97	56
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1161.9	5	55.97	56
1162	5	55.97	56
1162.1	5	55.97	56
1162.2	5	55.991	56
1162.3	5	55.991	56
1162.4	5	55.991	56
1162.5	5	56.012	56
1162.6	5	56.033	56
1162.7	5	56.054	56
1162.8	5	56.054	56
1162.9	5	56.075	56
1163	5	56.075	56
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1163.2	5	56.096	56.015
1163.3	5	56.096	56.025
1163.4	5	56.116	56.035
1163.5	5	56.137	56.045
1163.6	5	56.158	56.055
1163.7	5	56.158	56.065
1163.8	5	56.158	56.075
1163.9	5	56.179	56.085
1164	5	56.2	56.095
1164.1	5	56.221	56.115
1164.2	5	56.221	56.145
1164.3	5	56.221	56.175
1164.4	5	56.263	56.205
1164.5	5	56.263	56.235
1164.6	5	56.263	56.265
1164.7	5	56.284	56.295
1164.8	5	56.305	56.325
1164.9	5	56.326	56.355
1165	5	56.368	56.385
1165.1	5	56.368	56.415
1165.2	5	56.389	56.445
1165.3	5	56.41	56.475



1165.4	5	56.494	56.505
1165.5	5	56.494	56.535
1165.6	5	56.514	56.565
1165.7	5	56.556	56.595
1165.8	5	56.598	56.625
1165.9	5	56.682	56.655
1166	5	56.682	56.685
1166.1	5	56.724	56.71
1166.2	5	56.766	56.73
1166.3	5	56.808	56.75
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1166.6	5	56.85	56.81
1166.7	5	56.871	56.83
1166.8	5	56.871	56.85
1166.9	5	56.892	56.87
1167	5	56.892	56.89
1167.1	5	56.892	56.91
1167.2	5	56.912	56.93
1167.3	5	56.912	56.95
1167.4	5	56.912	56.97
1167.5	5	56.912	56.99
1167.6	5	56.892	57.01
1167.7	5	56.871	57.03
1167.8	5	56.871	57.05
1167.9	5	56.85	57.07
1168	5	56.85	57.09
1168.1	5	56.871	57.11
1168.2	5	56.871	57.13
1168.3	5	56.892	57.15
1168.4	5	56.912	57.17
1168.5	5	56.912	57.19
1168.6	5	56.933	57.21
1168.7	5	56.954	57.23
1168.8	5	56.975	57.25
1168.9	5	56.996	57.27
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1169.1	5	57.038	57.305
1169.2	5	57.059	57.315
1169.3	5	57.08	57.325
1169.4	5	57.101	57.335
1169.5	5	57.122	57.345
1169.6	5	57.143	57.355
1169.7	5	57.185	57.365
1169.8	5	57.185	57.375

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1170	5	57.227	57.395
1170.1	5	57.248	57.4
1170.2	5	57.269	57.4
1170.3	5	57.29	57.4
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1171.2	5	57.269	57.37
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1171.4	5	57.227	57.33
1171.5	5	57.206	57.31
1171.6	5	57.164	57.29
1171.7	5	57.122	57.27
1171.8	5	57.08	57.25
1171.9	5	57.038	57.23
1172	5	57.038	57.21
1172.1	5	56.933	57.19
1172.2	5	56.892	57.17
1172.3	5	56.85	57.15
1172.4	5	56.808	57.13
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1172.6	5	56.703	57.09
1172.7	5	56.661	57.07
1172.8	5	56.619	57.05
1172.9	5	56.619	57.03
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1173.2	5	56.556	56.985
1173.3	5	56.535	56.975
1173.4	5	56.535	56.965
1173.5	5	56.514	56.955
1173.6	5	56.514	56.945
1173.7	5	56.494	56.935
1173.8	5	56.494	56.925
1173.9	5	56.494	56.915
1174	5	56.473	56.905
1174.1	5	56.452	56.885
1174.2	5	56.452	56.855
1174.3	5	56.452	56.825

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1174.5	5	56.41	56.765
1174.6	5	56.389	56.735
1174.7	5	56.389	56.705
1174.8	5	56.389	56.675
1174.9	5	56.368	56.645
1175	5	56.326	56.615
1175.1	5	56.326	56.585
1175.2	5	56.326	56.555
1175.3	5	56.305	56.525
1175.4	5	56.263	56.495
1175.5	5	56.263	56.465
1175.6	5	56.242	56.435
1175.7	5	56.221	56.405
1175.8	5	56.2	56.375
1175.9	5	56.158	56.345
1176	5	56.158	56.315
1176.1	5	56.137	56.29
1176.2	5	56.116	56.27
1176.3	5	56.096	56.25
1176.4	5	56.075	56.23
1176.5	5	56.054	56.21
1176.6	5	56.012	56.19
1176.7	5	55.991	56.17
1176.8	5	55.97	56.15
1176.9	5	55.949	56.13
1177	5	55.949	56.11
1177.1	5	55.928	56.115
1177.2	5	55.907	56.145
1177.3	5	55.907	56.175
1177.4	5	55.886	56.205
1177.5	5	55.886	56.235
1177.6	5	55.886	56.265
1177.7	5	55.886	56.295
1177.8	5	55.886	56.325
1177.9	5	55.886	56.355
1178	5	55.907	56.385
1178.1	5	55.928	56.415
1178.2	5	55.949	56.445
1178.3	5	55.97	56.475
1178.4	5	55.991	56.505
1178.5	5	56.012	56.535
1178.6	5	56.033	56.565
1178.7	5	56.054	56.595
1178.8	5	56.096	56.625

1178.9	5	56.116	56.655
1179	5	56.158	56.685
1179.1	5	56.2	56.72
1179.2	5	56.221	56.76
1179.3	5	56.284	56.8
1179.4	5	56.326	56.84
1179.5	5	56.368	56.88
1179.6	5	56.41	56.92
1179.7	5	56.473	56.96
1179.8	5	56.494	57
1179.9	5	56.556	57.04
1180	5	56.598	57.08
1180.1	5	56.64	57.12
1180.2	5	56.703	57.16
1180.3	5	56.745	57.2
1180.4	5	56.787	57.24
1180.5	5	56.829	57.28
1180.6	5	56.892	57.32
1180.7	5	56.933	57.36
1180.8	5	56.975	57.4
1180.9	5	57.017	57.44
1181	5	57.059	57.48
1181.1	5	57.122	57.515
1181.2	5	57.164	57.545
1181.3	5	57.206	57.575
1181.4	5	57.248	57.605
1181.5	5	57.248	57.635
1181.6	5	57.331	57.665
1181.7	5	57.373	57.695
1181.8	5	57.436	57.725
1181.9	5	57.478	57.755
1182	5	57.478	57.785
1182.1	5	57.562	57.81
1182.2	5	57.604	57.83
1182.3	5	57.646	57.85
1182.4	5	57.646	57.87
1182.5	5	57.729	57.89
1182.6	5	57.771	57.91
1182.7	5	57.792	57.93
1182.8	5	57.834	57.95
1182.9	5	57.834	57.97
1183	5	57.855	57.99
1183.1	5	57.918	58
1183.2	5	57.939	58
1183.3	5	57.939	58

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1183.6	5	58.023	58
1183.7	5	58.023	58
1183.8	5	58.044	58
1183.9	5	58.044	58
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1186.9	5	58.085	58
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1187.7	5	57.981	58
1187.8	5	57.981	58

1187.9	5	57.96	58
1188	5	57.939	58
1188.1	5	57.918	57.995
1188.2	5	57.897	57.985
1188.3	5	57.876	57.975
1188.4	5	57.855	57.965
1188.5	5	57.834	57.955
1188.6	5	57.813	57.945
1188.7	5	57.792	57.935
1188.8	5	57.771	57.925
1188.9	5	57.75	57.915
1189	5	57.729	57.905
1189.1	5	57.708	57.895
1189.2	5	57.687	57.885
1189.3	5	57.667	57.875
1189.4	5	57.646	57.865
1189.5	5	57.625	57.855
1189.6	5	57.625	57.845
1189.7	5	57.625	57.835
1189.8	5	57.625	57.825
1189.9	5	57.625	57.815
1190	5	57.625	57.805
1190.1	5	57.625	57.795
1190.2	5	57.646	57.785
1190.3	5	57.646	57.775
1190.4	5	57.667	57.765
1190.5	5	57.667	57.755
1190.6	5	57.687	57.745
1190.7	5	57.687	57.735
1190.8	5	57.708	57.725
1190.9	5	57.708	57.715
1191	5	57.729	57.705
1191.1	5	57.729	57.7
1191.2	5	57.729	57.7
1191.3	5	57.75	57.7
1191.4	5	57.771	57.7
1191.5	5	57.771	57.7
1191.6	5	57.771	57.7
1191.7	5	57.771	57.7
1191.8	5	57.792	57.7
1191.9	5	57.813	57.7
1192	5	57.813	57.7
1192.1	5	57.813	57.705
1192.2	5	57.834	57.715
1192.3	5	57.855	57.725

1192.4	5	57.855	57.735
1192.5	5	57.855	57.745
1192.6	5	57.876	57.755
1192.7	5	57.897	57.765
1192.8	5	57.897	57.775
1192.9	5	57.918	57.785
1193	5	57.918	57.795
1193.1	5	57.918	57.805
1193.2	5	57.939	57.815
1193.3	5	57.96	57.825
1193.4	5	57.96	57.835
1193.5	5	57.96	57.845
1193.6	5	57.981	57.855
1193.7	5	58.002	57.865
1193.8	5	58.002	57.875
1193.9	5	58.023	57.885
1194	5	58.044	57.895
1194.1	5	58.085	57.905
1194.2	5	58.127	57.915
1194.3	5	58.127	57.925
1194.4	5	58.169	57.935
1194.5	5	58.19	57.945
1194.6	5	58.211	57.955
1194.7	5	58.232	57.965
1194.8	5	58.253	57.975
1194.9	5	58.274	57.985
1195	5	58.274	57.995
1195.1	5	58.316	58.005
1195.2	5	58.316	58.015
1195.3	5	58.316	58.025
1195.4	5	58.337	58.035
1195.5	5	58.337	58.045
1195.6	5	58.358	58.055
1195.7	5	58.358	58.065
1195.8	5	58.379	58.075
1195.9	5	58.4	58.085
1196	5	58.4	58.095
1196.1	5	58.421	58.115
1196.2	5	58.421	58.145
1196.3	5	58.442	58.175
1196.4	5	58.442	58.205
1196.5	5	58.463	58.235
1196.6	5	58.483	58.265
1196.7	5	58.483	58.295
1196.8	5	58.504	58.325

1196.9	5	58.525	58.355
1197	5	58.546	58.385
1197.1	5	58.567	58.425
1197.2	5	58.588	58.475
1197.3	5	58.609	58.525
1197.4	5	58.651	58.575
1197.5	5	58.693	58.625
1197.6	5	58.714	58.675
1197.7	5	58.756	58.725
1197.8	5	58.777	58.775
1197.9	5	58.819	58.825
1198	5	58.861	58.875
1198.1	5	58.881	58.91
1198.2	5	58.923	58.93
1198.3	5	58.965	58.95
1198.4	5	58.986	58.97
1198.5	5	59.028	58.99
1198.6	5	59.07	59.01
1198.7	5	59.091	59.03
1198.8	5	59.133	59.05
1198.9	5	59.175	59.07
1199	5	59.196	59.09
1199.1	5	59.238	59.115
1199.2	5	59.238	59.145
1199.3	5	59.3	59.175
1199.4	5	59.321	59.205
1199.5	5	59.342	59.235
1199.6	5	59.363	59.265
1199.7	5	59.384	59.295
1199.8	5	59.405	59.327
1199.9	5	59.426	59.355
1200	5	59.447	59.385
1200.1	5	59.447	59.42
1200.2	5	59.468	59.46
1200.3	5	59.489	59.5
1200.4	5	59.489	59.54
1200.5	5	59.51	59.58
1200.6	5	59.531	59.62
1200.7	5	59.552	59.66
1200.8	5	59.552	59.7
1200.9	5	59.552	59.74
1201	5	59.573	59.78
1201.1	5	59.594	59.805
1201.2	5	59.615	59.815
1201.3	5	59.615	59.825



1201.4	5	59.615	59.835
1201.5	5	59.656	59.845
1201.6	5	59.677	59.855
1201.7	5	59.677	59.866
1201.8	5	59.677	59.875
1201.9	5	59.719	59.885
1202	5	59.719	59.895
1202.1	5	59.74	59.9
1202.2	5	59.74	59.9
1202.3	5	59.74	59.9
1202.4	5	59.782	59.9
1202.5	5	59.782	59.9
1202.6	5	59.782	59.9
1202.7	5	59.803	59.9
1202.8	5	59.824	59.9
1202.9	5	59.845	59.9
1203	5	59.866	59.9
1203.1	5	59.866	59.895
1203.2	5	59.866	59.885
1203.3	5	59.887	59.875
1203.4	5	59.908	59.865
1203.5	5	59.908	59.855
1203.6	5	59.929	59.845
1203.7	5	59.95	59.835
1203.8	5	59.971	59.825
1203.9	5	59.971	59.815
1204	5	59.992	59.805
1204.1	5	59.992	59.79
1204.2	5	59.992	59.77
1204.3	5	60.013	59.75
1204.4	5	60.013	59.73
1204.5	5	60.013	59.71
1204.6	5	60.013	59.69
1204.7	5	60.013	59.67
1204.8	5	59.992	59.65
1204.9	5	59.971	59.63
1205	5	59.971	59.61
1205.1	5	59.95	59.59
1205.2	5	59.929	59.57
1205.3	5	59.908	59.55
1205.4	5	59.887	59.53
1205.5	5	59.866	59.51
1205.6	5	59.845	59.49
1205.7	5	59.803	59.47
1205.8	5	59.782	59.45

1205.9	5	59.761	59.43
1206	5	59.74	59.41
1206.1	5	59.719	59.39
1206.2	5	59.677	59.37
1206.3	5	59.656	59.35
1206.4	5	59.636	59.33
1206.5	5	59.594	59.31
1206.6	5	59.573	59.29
1206.7	5	59.552	59.27
1206.8	5	59.531	59.25
1206.9	5	59.489	59.23
1207	5	59.468	59.21
1207.1	5	59.447	59.195
1207.2	5	59.426	59.185
1207.3	5	59.405	59.175
1207.4	5	59.405	59.165
1207.5	5	59.405	59.155
1207.6	5	59.405	59.145
1207.7	5	59.405	59.135
1207.8	5	59.426	59.125
1207.9	5	59.426	59.115
1208	5	59.426	59.105
1208.1	5	59.426	59.095
1208.2	5	59.447	59.085
1208.3	5	59.447	59.075
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1208.8	5	59.468	59.025
1208.9	5	59.468	59.015
1209	5	59.468	59.005
1209.1	5	59.468	58.995
1209.2	5	59.447	58.985
1209.3	5	59.426	58.975
1209.4	5	59.405	58.965
1209.5	5	59.384	58.955
1209.6	5	59.384	58.945
1209.7	5	59.342	58.935
1209.8	5	59.321	58.925
1209.9	5	59.3	58.915
1210	5	59.3	58.905
1210.1	5	59.3	58.89
1210.2	5	59.258	58.87
1210.3	5	59.258	58.85

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1210.5	5	59.238	58.81
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1210.7	5	59.196	58.77
1210.8	5	59.175	58.75
1210.9	5	59.154	58.73
1211	5	59.154	58.71
1211.1	5	59.133	58.695
1211.2	5	59.112	58.685
1211.3	5	59.091	58.675
1211.4	5	59.091	58.665
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1211.6	5	59.007	58.645
1211.7	5	58.986	58.635
1211.8	5	58.986	58.625
1211.9	5	58.965	58.615
1212	5	58.923	58.605
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1212.2	5	58.881	58.585
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1212.4	5	58.84	58.565
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1212.6	5	58.777	58.545
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1212.8	5	58.777	58.525
1212.9	5	58.756	58.515
1213	5	58.714	58.505
1213.1	5	58.714	58.495
1213.2	5	58.693	58.485
1213.3	5	58.672	58.475
1213.4	5	58.651	58.465
1213.5	5	58.63	58.455
1213.6	5	58.63	58.445
1213.7	5	58.609	58.435
1213.8	5	58.588	58.425
1213.9	5	58.567	58.415
1214	5	58.546	58.405
1214.1	5	58.525	58.4
1214.2	5	58.504	58.4
1214.3	5	58.483	58.4
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1214.5	5	58.463	58.4
1214.6	5	58.442	58.4
1214.7	5	58.421	58.4
1214.8	5	58.4	58.4

1214.9	5	58.379	58.4
1215	5	58.358	58.4
1215.1	5	58.337	58.395
1215.2	5	58.337	58.385
1215.3	5	58.316	58.375
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1215.8	5	58.232	58.325
1215.9	5	58.211	58.315
1216	5	58.19	58.305
1216.1	5	58.169	58.295
1216.2	5	58.148	58.285
1216.3	5	58.127	58.275
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1216.5	5	58.106	58.255
1216.6	5	58.085	58.245
1216.7	5	58.065	58.235
1216.8	5	58.044	58.225
1216.9	5	58.044	58.215
1217	5	58.023	58.205
1217.1	5	58.002	58.195
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1217.3	5	57.96	58.175
1217.4	5	57.939	58.165
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1217.6	5	57.918	58.145
1217.7	5	57.897	58.135
1217.8	5	57.897	58.125
1217.9	5	57.876	58.115
1218	5	57.876	58.105
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1219.1	5	57.771	57.995
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1219.5	5	57.792	57.955
1219.6	5	57.792	57.945
1219.7	5	57.792	57.935
1219.8	5	57.834	57.925
1219.9	5	57.855	57.915
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1220.2	5	57.876	57.9
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1223.8	5	58.274	57.9

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1227.8	5	58.546	58.175
1227.9	5	58.567	58.185
1228	5	58.567	58.195
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1230.3	5	58.693	58.175
1230.4	5	58.693	58.165
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1230.6	5	58.735	58.145
1230.7	5	58.735	58.135
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1231	5	58.756	58.105
1231.1	5	58.756	58.095
1231.2	5	58.756	58.085
1231.3	5	58.756	58.075
1231.4	5	58.735	58.065
1231.5	5	58.735	58.055
1231.6	5	58.735	58.045
1231.7	5	58.714	58.035
1231.8	5	58.714	58.025
1231.9	5	58.693	58.015
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1232.7	5	58.567	58
1232.8	5	58.546	58

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1233	5	58.504	58
1233.1	5	58.463	58
1233.2	5	58.421	58
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1233.8	5	58.253	58
1233.9	5	58.232	58
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1234.6	5	58.023	58
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1234.8	5	57.981	58
1234.9	5	57.981	58
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1238	5	57.939	57.905
1238.1	5	57.939	57.9
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1239	5	57.981	57.9
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1239.4	5	58.044	57.935
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1239.7	5	58.065	57.965
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1239.9	5	58.065	57.985
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1240.2	5	58.065	58.015
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1240.7	5	58.065	58.065
1240.8	5	58.065	58.075
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1242	5	58.085	58.1
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1246	5	58.295	58.3
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1246.3	5	58.316	58.275

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1247.1	5	58.337	58.195
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1251.8	5	57.373	57.2
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1252.2	5	57.248	57.085
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1253.1	5	57.017	56.98
1253.2	5	56.975	56.94
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1253.7	5	56.787	56.74
1253.8	5	56.724	56.7
1253.9	5	56.682	56.66
1254	5	56.619	56.62
1254.1	5	56.577	56.575
1254.2	5	56.514	56.525
1254.3	5	56.473	56.475
1254.4	5	56.431	56.425
1254.5	5	56.368	56.375
1254.6	5	56.326	56.325
1254.7	5	56.284	56.275
1254.8	5	56.242	56.225
1254.9	5	56.2	56.175
1255	5	56.158	56.125
1255.1	5	56.116	56.095
1255.2	5	56.096	56.085
1255.3	5	56.054	56.075

1255.4	5	56.033	56.065
1255.5	5	56.012	56.055
1255.6	5	55.991	56.045
1255.7	5	55.991	56.035
1255.8	5	55.991	56.025
1255.9	5	55.97	56.015
1256	5	55.97	56.005
1256.1	5	55.949	55.99
1256.2	5	55.949	55.97
1256.3	5	55.949	55.95
1256.4	5	55.928	55.93
1256.5	5	55.928	55.91
1256.6	5	55.907	55.89
1256.7	5	55.907	55.87
1256.8	5	55.886	55.85
1256.9	5	55.865	55.83
1257	5	55.844	55.81
1257.1	5	55.844	55.785
1257.2	5	55.802	55.755
1257.3	5	55.781	55.725
1257.4	5	55.739	55.695
1257.5	5	55.739	55.665
1257.6	5	55.718	55.635
1257.7	5	55.677	55.605
1257.8	5	55.656	55.575
1257.9	5	55.635	55.545
1258	5	55.635	55.515
1258.1	5	55.593	55.485
1258.2	5	55.572	55.455
1258.3	5	55.53	55.425
1258.4	5	55.53	55.395
1258.5	5	55.509	55.365
1258.6	5	55.467	55.335
1258.7	5	55.446	55.305
1258.8	5	55.446	55.275
1258.9	5	55.425	55.245
1259	5	55.383	55.215
1259.1	5	55.341	55.195
1259.2	5	55.32	55.185
1259.3	5	55.32	55.175
1259.4	5	55.3	55.165
1259.5	5	55.237	55.155
1259.6	5	55.216	55.145
1259.7	5	55.216	55.135
1259.8	5	55.195	55.125

1259.9	5	55.153	55.115
1260	5	55.111	55.105
1260.1	5	55.111	55.095
1260.2	5	55.09	55.085
1260.3	5	55.048	55.075
1260.4	5	55.027	55.065
1260.5	5	54.964	55.055
1260.6	5	54.964	55.045
1260.7	5	54.943	55.035
1260.8	5	54.902	55.025
1260.9	5	54.839	55.015
1261	5	54.839	55.005
1261.1	5	54.797	54.995
1261.2	5	54.755	54.985
1261.3	5	54.734	54.975
1261.4	5	54.734	54.965
1261.5	5	54.734	54.955
1261.6	5	54.755	54.945
1261.7	5	54.797	54.935
1261.8	5	54.818	54.925
1261.9	5	54.839	54.915
1262	5	54.881	54.905
1262.1	5	54.902	54.9
1262.2	5	54.923	54.9
1262.3	5	54.943	54.9
1262.4	5	54.964	54.9
1262.5	5	54.964	54.9
1262.6	5	54.964	54.9
1262.7	5	54.964	54.9
1262.8	5	54.943	54.9
1262.9	5	54.943	54.9
1263	5	54.943	54.9
1263.1	5	54.923	54.9
1263.2	5	54.902	54.9
1263.3	5	54.902	54.9
1263.4	5	54.881	54.9
1263.5	5	54.881	54.9
1263.6	5	54.86	54.9
1263.7	5	54.839	54.9
1263.8	5	54.818	54.9
1263.9	5	54.797	54.9
1264	5	54.797	54.9
1264.1	5	54.776	54.9
1264.2	5	54.776	54.9
1264.3	5	54.734	54.9

1264.4	5	54.713	54.9
1264.5	5	54.692	54.9
1264.6	5	54.692	54.9
1264.7	5	54.671	54.9
1264.8	5	54.65	54.9
1264.9	5	54.629	54.9
1265	5	54.608	54.9
1265.1	5	54.608	54.9
1265.2	5	54.587	54.9
1265.3	5	54.566	54.9
1265.4	5	54.545	54.9
1265.5	5	54.525	54.9
1265.6	5	54.504	54.9
1265.7	5	54.504	54.9
1265.8	5	54.483	54.9
1265.9	5	54.462	54.9
1266	5	54.462	54.9
1266.1	5	54.462	54.9
1266.2	5	54.441	54.9
1266.3	5	54.441	54.9
1266.4	5	54.42	54.9
1266.5	5	54.42	54.9
1266.6	5	54.42	54.9
1266.7	5	54.42	54.9
1266.8	5	54.399	54.9
1266.9	5	54.378	54.9
1267	5	54.378	54.9
1267.1	5	54.357	54.905
1267.2	5	54.357	54.915
1267.3	5	54.336	54.925
1267.4	5	54.336	54.935
1267.5	5	54.315	54.945
1267.6	5	54.315	54.955
1267.7	5	54.315	54.965
1267.8	5	54.294	54.975
1267.9	5	54.273	54.985
1268	5	54.273	54.995
1268.1	5	54.252	55
1268.2	5	54.231	55
1268.3	5	54.21	55
1268.4	5	54.189	55
1268.5	5	54.189	55
1268.6	5	54.189	55
1268.7	5	54.21	55
1268.8	5	54.21	55

1268.9	5	54.21	55
1269	5	54.231	55
1269.1	5	54.252	55
1269.2	5	54.294	55
1269.3	5	54.315	55
1269.4	5	54.315	55
1269.5	5	54.336	55
1269.6	5	54.357	55
1269.7	5	54.42	55
1269.8	5	54.42	55
1269.9	5	54.441	55
1270	5	54.462	55
1270.1	5	54.504	55
1270.2	5	54.525	55
1270.3	5	54.566	55
1270.4	5	54.587	55
1270.5	5	54.629	55
1270.6	5	54.692	55
1270.7	5	54.692	55
1270.8	5	54.713	55
1270.9	5	54.734	55
1271	5	54.755	55
1271.1	5	54.776	55
1271.2	5	54.797	55
1271.3	5	54.797	55
1271.4	5	54.818	55
1271.5	5	54.797	55
1271.6	5	54.797	55
1271.7	5	54.797	55
1271.8	5	54.797	55
1271.9	5	54.776	55
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1272.6	5	54.713	55
1272.7	5	54.713	55
1272.8	5	54.692	55
1272.9	5	54.692	55
1273	5	54.671	55
1273.1	5	54.65	55.005
1273.2	5	54.65	55.015
1273.3	5	54.629	55.025



1273.4	5	54.608	55.035
1273.5	5	54.587	55.045
1273.6	5	54.587	55.055
1273.7	5	54.566	55.065
1273.8	5	54.566	55.075
1273.9	5	54.545	55.085
1274	5	54.545	55.095
1274.1	5	54.545	55.1
1274.2	5	54.545	55.1
1274.3	5	54.545	55.1
1274.4	5	54.545	55.1
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1274.8	5	54.545	55.1
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1275	5	54.545	55.1
1275.1	5	54.545	55.095
1275.2	5	54.545	55.085
1275.3	5	54.545	55.075
1275.4	5	54.545	55.065
1275.5	5	54.566	55.055
1275.6	5	54.587	55.045
1275.7	5	54.587	55.035
1275.8	5	54.608	55.025
1275.9	5	54.608	55.015
1276	5	54.608	55.005
1276.1	5	54.629	54.995
1276.2	5	54.629	54.985
1276.3	5	54.65	54.975
1276.4	5	54.65	54.965
1276.5	5	54.65	54.955
1276.6	5	54.671	54.945
1276.7	5	54.671	54.935
1276.8	5	54.671	54.925
1276.9	5	54.671	54.915
1277	5	54.692	54.905
1277.1	5	54.692	54.9
1277.2	5	54.692	54.9
1277.3	5	54.692	54.9
1277.4	5	54.692	54.9
1277.5	5	54.692	54.9
1277.6	5	54.692	54.9
1277.7	5	54.692	54.9
1277.8	5	54.692	54.9

1277.9	5	54.671	54.9
1278	5	54.671	54.9
1278.1	5	54.671	54.895
1278.2	5	54.671	54.885
1278.3	5	54.65	54.875
1278.4	5	54.65	54.865
1278.5	5	54.629	54.855
1278.6	5	54.629	54.845
1278.7	5	54.629	54.835
1278.8	5	54.629	54.825
1278.9	5	54.608	54.815
1279	5	54.587	54.805
1279.1	5	54.587	54.795
1279.2	5	54.566	54.785
1279.3	5	54.545	54.775
1279.4	5	54.525	54.765
1279.5	5	54.504	54.755
1279.6	5	54.504	54.745
1279.7	5	54.483	54.735
1279.8	5	54.483	54.725
1279.9	5	54.462	54.715
1280	5	54.462	54.705
1280.1	5	54.462	54.695
1280.2	5	54.441	54.685
1280.3	5	54.441	54.675
1280.4	5	54.42	54.665
1280.5	5	54.42	54.655
1280.6	5	54.399	54.645
1280.7	5	54.399	54.635
1280.8	5	54.378	54.625
1280.9	5	54.378	54.615
1281	5	54.357	54.605
1281.1	5	54.357	54.59
1281.2	5	54.336	54.57
1281.3	5	54.315	54.55
1281.4	5	54.315	54.53
1281.5	5	54.294	54.51
1281.6	5	54.294	54.49
1281.7	5	54.273	54.47
1281.8	5	54.252	54.45
1281.9	5	54.252	54.43
1282	5	54.231	54.41
1282.1	5	54.21	54.395
1282.2	5	54.189	54.385
1282.3	5	54.189	54.375

1282.4	5	54.168	54.365
1282.5	5	54.147	54.355
1282.6	5	54.127	54.345
1282.7	5	54.127	54.335
1282.8	5	54.106	54.325
1282.9	5	54.085	54.315
1283	5	54.064	54.305
1283.1	5	54.043	54.3
1283.2	5	54.022	54.3
1283.3	5	54.001	54.3
1283.4	5	54.001	54.3
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1283.7	5	54.001	54.3
1283.8	5	54.001	54.3
1283.9	5	54.001	54.3
1284	5	54.001	54.3
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1284.2	5	54.001	54.285
1284.3	5	54.001	54.275
1284.4	5	54.001	54.265
1284.5	5	54.001	54.255
1284.6	5	54.001	54.245
1284.7	5	54.001	54.235
1284.8	5	54.001	54.225
1284.9	5	54.001	54.215
1285	5	54.001	54.205
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1285.4	5	53.98	54.165
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1285.6	5	53.959	54.145
1285.7	5	53.959	54.135
1285.8	5	53.938	54.125
1285.9	5	53.917	54.115
1286	5	53.917	54.105
1286.1	5	53.917	54.1
1286.2	5	53.896	54.1
1286.3	5	53.875	54.1
1286.4	5	53.833	54.1
1286.5	5	53.833	54.1
1286.6	5	53.833	54.1
1286.7	5	53.812	54.1
1286.8	5	53.77	54.1

1286.9	5	53.749	54.1
1287	5	53.749	54.1
1287.1	5	53.729	54.1
1287.2	5	53.687	54.1
1287.3	5	53.666	54.1
1287.4	5	53.666	54.1
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1287.6	5	53.645	54.1
1287.7	5	53.603	54.1
1287.8	5	53.582	54.1
1287.9	5	53.582	54.1
1288	5	53.561	54.1
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1288.2	5	53.477	54.085
1288.3	5	53.456	54.075
1288.4	5	53.456	54.065
1288.5	5	53.456	54.055
1288.6	5	53.477	54.045
1288.7	5	53.498	54.035
1288.8	5	53.498	54.025
1288.9	5	53.519	54.015
1289	5	53.54	54.005
1289.1	5	53.582	54
1289.2	5	53.582	54
1289.3	5	53.603	54
1289.4	5	53.624	54
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1289.6	5	53.666	54
1289.7	5	53.687	54
1289.8	5	53.708	54
1289.9	5	53.729	54
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1296.6	5	53.603	54.055
1296.7	5	53.603	54.065
1296.8	5	53.603	54.075
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1297	5	53.603	54.095
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1297.2	5	53.624	54.115
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1297.7	5	53.687	54.165
1297.8	5	53.708	54.175
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1298	5	53.729	54.195
1298.1	5	53.77	54.215
1298.2	5	53.833	54.245
1298.3	5	53.833	54.275
1298.4	5	53.875	54.305
1298.5	5	53.896	54.335
1298.6	5	53.938	54.365
1298.7	5	54.043	54.395
1298.8	5	54.043	54.425
1298.9	5	54.085	54.455
1299	5	54.127	54.485
1299.1	5	54.168	54.515
1299.2	5	54.21	54.545
1299.3	5	54.252	54.575
1299.4	5	54.294	54.605
1299.5	5	54.336	54.635
1299.6	5	54.378	54.665
1299.7	5	54.42	54.695
1299.8	5	54.462	54.725
1299.9	5	54.483	54.755
1300	5	54.525	54.785
1300.1	5	54.545	54.805
1300.2	5	54.566	54.815
1300.3	5	54.587	54.825

1300.4	5	54.608	54.835
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1300.6	5	54.629	54.855
1300.7	5	54.65	54.865
1300.8	5	54.65	54.875
1300.9	5	54.671	54.885
1301	5	54.671	54.895
1301.1	5	54.671	54.905
1301.2	5	54.692	54.915
1301.3	5	54.692	54.925
1301.4	5	54.692	54.935
1301.5	5	54.713	54.945
1301.6	5	54.713	54.955
1301.7	5	54.734	54.965
1301.8	5	54.734	54.975
1301.9	5	54.755	54.985
1302	5	54.755	54.995
1302.1	5	54.755	55.005
1302.2	5	54.776	55.015
1302.3	5	54.797	55.025
1302.4	5	54.818	55.035
1302.5	5	54.818	55.045
1302.6	5	54.839	55.055
1302.7	5	54.86	55.065
1302.8	5	54.881	55.075
1302.9	5	54.902	55.085
1303	5	54.923	55.095
1303.1	5	54.923	55.105
1303.2	5	54.964	55.115
1303.3	5	54.985	55.125
1303.4	5	54.985	55.135
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1303.6	5	55.027	55.155
1303.7	5	55.048	55.165
1303.8	5	55.069	55.175
1303.9	5	55.09	55.185
1304	5	55.111	55.195
1304.1	5	55.132	55.2
1304.2	5	55.153	55.2
1304.3	5	55.174	55.2
1304.4	5	55.195	55.2
1304.5	5	55.195	55.2
1304.6	5	55.216	55.2
1304.7	5	55.237	55.2
1304.8	5	55.258	55.2

1304.9	5	55.258	55.2
1305	5	55.3	55.2
1305.1	5	55.32	55.205
1305.2	5	55.341	55.215
1305.3	5	55.341	55.225
1305.4	5	55.362	55.235
1305.5	5	55.404	55.245
1305.6	5	55.425	55.255
1305.7	5	55.446	55.265
1305.8	5	55.446	55.275
1305.9	5	55.467	55.285
1306	5	55.509	55.295
1306.1	5	55.53	55.305
1306.2	5	55.53	55.315
1306.3	5	55.551	55.325
1306.4	5	55.572	55.335
1306.5	5	55.635	55.345
1306.6	5	55.656	55.355
1306.7	5	55.656	55.365
1306.8	5	55.677	55.375
1306.9	5	55.718	55.385
1307	5	55.739	55.395
1307.1	5	55.739	55.405
1307.2	5	55.76	55.415
1307.3	5	55.802	55.425
1307.4	5	55.844	55.435
1307.5	5	55.844	55.445
1307.6	5	55.865	55.455
1307.7	5	55.886	55.465
1307.8	5	55.907	55.476
1307.9	5	55.949	55.485
1308	5	55.949	55.495
1308.1	5	55.97	55.505
1308.2	5	56.012	55.515
1308.3	5	56.033	55.525
1308.4	5	56.054	55.535
1308.5	5	56.075	55.545
1308.6	5	56.096	55.555
1308.7	5	56.116	55.565
1308.8	5	56.137	55.575
1308.9	5	56.137	55.585
1309	5	56.137	55.595
1309.1	5	56.158	55.605
1309.2	5	56.158	55.615
1309.3	5	56.158	55.625



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1309.5	5	56.158	55.645
1309.6	5	56.158	55.655
1309.7	5	56.137	55.665
1309.8	5	56.137	55.675
1309.9	5	56.116	55.685
1310	5	56.116	55.695
1310.1	5	56.116	55.705
1310.2	5	56.096	55.715
1310.3	5	56.096	55.725
1310.4	5	56.096	55.735
1310.5	5	56.075	55.745
1310.6	5	56.075	55.755
1310.7	5	56.075	55.765
1310.8	5	56.075	55.775
1310.9	5	56.054	55.785
1311	5	56.054	55.795
1311.1	5	56.054	55.805
1311.2	5	56.033	55.815
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1311.4	5	56.033	55.835
1311.5	5	56.033	55.845
1311.6	5	56.012	55.855
1311.7	5	56.012	55.865
1311.8	5	56.012	55.875
1311.9	5	56.012	55.885
1312	5	56.033	55.895
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1312.2	5	56.033	55.915
1312.3	5	56.033	55.925
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1312.5	5	56.054	55.945
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1319.9	5	55.97	56
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1321.7	5	56.096	56
1321.8	5	56.116	56
1321.9	5	56.116	56
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1324.9	5	56.2	56
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1325.8	5	56.179	56
1325.9	5	56.179	56
1326	5	56.179	56
1326.1	5	56.158	55.995
1326.2	5	56.158	55.985
1326.3	5	56.137	55.975
1326.4	5	56.137	55.965
1326.5	5	56.116	55.955
1326.6	5	56.096	55.945
1326.7	5	56.075	55.935
1326.8	5	56.075	55.925
1326.9	5	56.033	55.915
1327	5	56.012	55.905
1327.1	5	55.991	55.9
1327.2	5	55.97	55.9
1327.3	5	55.949	55.9

1327.4	5	55.928	55.9
1327.5	5	55.907	55.9
1327.6	5	55.886	55.9
1327.7	5	55.844	55.9
1327.8	5	55.823	55.9
1327.9	5	55.802	55.9
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1328.2	5	55.718	55.9
1328.3	5	55.698	55.9
1328.4	5	55.677	55.9
1328.5	5	55.635	55.9
1328.6	5	55.614	55.9
1328.7	5	55.593	55.9
1328.8	5	55.551	55.9
1328.9	5	55.53	55.9
1329	5	55.509	55.9
1329.1	5	55.509	55.895
1329.2	5	55.488	55.885
1329.3	5	55.467	55.875
1329.4	5	55.467	55.865
1329.5	5	55.467	55.855
1329.6	5	55.446	55.845
1329.7	5	55.446	55.835
1329.8	5	55.446	55.825
1329.9	5	55.425	55.815
1330	5	55.425	55.805
1330.1	5	55.404	55.79
1330.2	5	55.383	55.77
1330.3	5	55.362	55.75
1330.4	5	55.341	55.73
1330.5	5	55.32	55.71
1330.6	5	55.3	55.69
1330.7	5	55.258	55.67
1330.8	5	55.237	55.65
1330.9	5	55.195	55.63
1331	5	55.132	55.61
1331.1	5	55.09	55.59
1331.2	5	55.027	55.57
1331.3	5	54.964	55.55
1331.4	5	54.923	55.53
1331.5	5	54.881	55.51
1331.6	5	54.818	55.49
1331.7	5	54.776	55.47
1331.8	5	54.713	55.45

1331.9	5	54.671	55.43
1332	5	54.629	55.41
1332.1	5	54.608	55.39
1332.2	5	54.608	55.37
1332.3	5	54.608	55.35
1332.4	5	54.608	55.33
1332.5	5	54.608	55.31
1332.6	5	54.629	55.29
1332.7	5	54.629	55.27
1332.8	5	54.65	55.25
1332.9	5	54.65	55.23
1333	5	54.65	55.21
1333.1	5	54.671	55.195
1333.2	5	54.671	55.185
1333.3	5	54.671	55.175
1333.4	5	54.671	55.165
1333.5	5	54.692	55.155
1333.6	5	54.692	55.145
1333.7	5	54.692	55.135
1333.8	5	54.692	55.125
1333.9	5	54.671	55.115
1334	5	54.671	55.105
1334.1	5	54.671	55.095
1334.2	5	54.671	55.085
1334.3	5	54.65	55.075
1334.4	5	54.629	55.065
1334.5	5	54.608	55.055
1334.6	5	54.587	55.045
1334.7	5	54.587	55.035
1334.8	5	54.566	55.025
1334.9	5	54.545	55.015
1335	5	54.525	55.005
1335.1	5	54.525	54.995
1335.2	5	54.504	54.985
1335.3	5	54.483	54.975
1335.4	5	54.462	54.965
1335.5	5	54.441	54.955
1335.6	5	54.441	54.945
1335.7	5	54.441	54.935
1335.8	5	54.42	54.925
1335.9	5	54.42	54.915
1336	5	54.42	54.905
1336.1	5	54.399	54.885
1336.2	5	54.399	54.855
1336.3	5	54.378	54.825

1336.4	5	54.378	54.795
1336.5	5	54.378	54.765
1336.6	5	54.357	54.735
1336.7	5	54.357	54.705
1336.8	5	54.336	54.675
1336.9	5	54.336	54.645
1337	5	54.336	54.615
1337.1	5	54.315	54.59
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1337.7	5	54.273	54.47
1337.8	5	54.252	54.45
1337.9	5	54.252	54.43
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1338.1	5	54.231	54.39
1338.2	5	54.21	54.37
1338.3	5	54.21	54.35
1338.4	5	54.189	54.33
1338.5	5	54.168	54.31
1338.6	5	54.168	54.29
1338.7	5	54.147	54.27
1338.8	5	54.147	54.25
1338.9	5	54.127	54.23
1339	5	54.106	54.21
1339.1	5	54.106	54.195
1339.2	5	54.085	54.185
1339.3	5	54.085	54.175
1339.4	5	54.064	54.165
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1339.7	5	54.022	54.135
1339.8	5	54.001	54.125
1339.9	5	53.98	54.115
1340	5	53.938	54.105
1340.1	5	53.917	54.085
1340.2	5	53.896	54.055
1340.3	5	53.854	54.025
1340.4	5	53.833	53.995
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1340.6	5	53.77	53.935
1340.7	5	53.749	53.905
1340.8	5	53.729	53.875

1340.9	5	53.687	53.845
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1341.2	5	53.603	53.74
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1341.4	5	53.561	53.66
1341.5	5	53.519	53.62
1341.6	5	53.519	53.58
1341.7	5	53.456	53.54
1341.8	5	53.435	53.5
1341.9	5	53.393	53.46
1342	5	53.372	53.42
1342.1	5	53.372	53.395
1342.2	5	53.31	53.385
1342.3	5	53.289	53.375
1342.4	5	53.247	53.365
1342.5	5	53.247	53.355
1342.6	5	53.205	53.345
1342.7	5	53.184	53.335
1342.8	5	53.163	53.325
1342.9	5	53.142	53.315
1343	5	53.142	53.305
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1343.2	5	53.079	53.27
1343.3	5	53.058	53.25
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1343.8	5	52.974	53.15
1343.9	5	52.954	53.13
1344	5	52.933	53.11
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1344.4	5	52.849	53.03
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1344.7	5	52.786	52.97
1344.8	5	52.765	52.95
1344.9	5	52.765	52.93
1345	5	52.744	52.91
1345.1	5	52.744	52.885
1345.2	5	52.744	52.855
1345.3	5	52.744	52.825



1345.4	5	52.744	52.795
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1345.6	5	52.723	52.735
1345.7	5	52.723	52.705
1345.8	5	52.723	52.675
1345.9	5	52.723	52.645
1346	5	52.702	52.615
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1346.2	5	52.702	52.57
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1346.4	5	52.681	52.53
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1346.7	5	52.681	52.47
1346.8	5	52.681	52.45
1346.9	5	52.681	52.43
1347	5	52.66	52.41
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1347.8	5	52.618	52.25
1347.9	5	52.597	52.23
1348	5	52.576	52.21
1348.1	5	52.556	52.195
1348.2	5	52.535	52.185
1348.3	5	52.514	52.175
1348.4	5	52.493	52.165
1348.5	5	52.493	52.155
1348.6	5	52.472	52.145
1348.7	5	52.472	52.135
1348.8	5	52.451	52.125
1348.9	5	52.451	52.115
1349	5	52.43	52.105
1349.1	5	52.43	52.095
1349.2	5	52.409	52.085
1349.3	5	52.409	52.075
1349.4	5	52.409	52.065
1349.5	5	52.388	52.055
1349.6	5	52.388	52.045
1349.7	5	52.367	52.035
1349.8	5	52.367	52.025

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1353.4	5	52.325	52.035
1353.5	5	52.325	52.045
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1353.7	5	52.325	52.065
1353.8	5	52.325	52.075
1353.9	5	52.325	52.085
1354	5	52.325	52.095
1354.1	5	52.325	52.095
1354.2	5	52.304	52.085
1354.3	5	52.304	52.075

1354.4	5	52.304	52.065
1354.5	5	52.283	52.055
1354.6	5	52.283	52.045
1354.7	5	52.262	52.035
1354.8	5	52.262	52.025
1354.9	5	52.241	52.015
1355	5	52.22	52.005
1355.1	5	52.22	52
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1355.3	5	52.158	52
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1355.7	5	52.011	52
1355.8	5	51.969	52
1355.9	5	51.927	52
1356	5	51.885	52
1356.1	5	51.864	51.995
1356.2	5	51.822	51.985
1356.3	5	51.801	51.975
1356.4	5	51.78	51.965
1356.5	5	51.78	51.955
1356.6	5	51.76	51.945
1356.7	5	51.739	51.935
1356.8	5	51.739	51.925
1356.9	5	51.718	51.915
1357	5	51.718	51.905
1357.1	5	51.697	51.885
1357.2	5	51.697	51.855
1357.3	5	51.676	51.825
1357.4	5	51.676	51.795
1357.5	5	51.676	51.765
1357.6	5	51.655	51.735
1357.7	5	51.655	51.705
1357.8	5	51.634	51.675
1357.9	5	51.613	51.645
1358	5	51.613	51.615
1358.1	5	51.592	51.59
1358.2	5	51.571	51.57
1358.3	5	51.55	51.55
1358.4	5	51.529	51.53
1358.5	5	51.508	51.51
1358.6	5	51.466	51.49
1358.7	5	51.445	51.47
1358.8	5	51.424	51.45

1358.9	5	51.383	51.43
1359	5	51.341	51.41
1359.1	5	51.299	51.385
1359.2	5	51.257	51.355
1359.3	5	51.236	51.325
1359.4	5	51.173	51.295
1359.5	5	51.131	51.265
1359.6	5	51.089	51.235
1359.7	5	51.047	51.205
1359.8	5	50.985	51.175
1359.9	5	50.943	51.145
1360	5	50.88	51.115
1360.1	5	50.838	51.08
1360.2	5	50.775	51.04
1360.3	5	50.712	51
1360.4	5	50.67	50.96
1360.5	5	50.607	50.92
1360.6	5	50.566	50.88
1360.7	5	50.524	50.84
1360.8	5	50.461	50.8
1360.9	5	50.461	50.76
1361	5	50.377	50.72
1361.1	5	50.335	50.68
1361.2	5	50.293	50.64
1361.3	5	50.251	50.6
1361.4	5	50.251	50.56
1361.5	5	50.168	50.52
1361.6	5	50.126	50.48
1361.7	5	50.063	50.44
1361.8	5	50.063	50.4
1361.9	5	50	50.36
1362	5	49.958	50.32
1362.1	5	49.916	50.275
1362.2	5	49.916	50.225
1362.3	5	49.853	50.175
1362.4	5	49.749	50.125
1362.5	5	49.707	50.075
1362.6	5	49.644	50.025
1362.7	5	49.644	49.975
1362.8	5	49.602	49.925
1362.9	5	49.497	49.875
1363	5	49.434	49.825
1363.1	5	49.434	49.775
1363.2	5	49.393	49.725
1363.3	5	49.33	49.675

1363.4	5	49.225	49.625
1363.5	5	49.225	49.575
1363.6	5	49.183	49.525
1363.7	5	49.12	49.475
1363.8	5	49.036	49.425
1363.9	5	48.974	49.375
1364	5	48.974	49.325
1364.1	5	48.932	49.27
1364.2	5	48.89	49.21
1364.3	5	48.806	49.15
1364.4	5	48.806	49.09
1364.5	5	48.764	49.03
1364.6	5	48.722	48.97
1364.7	5	48.68	48.91
1364.8	5	48.618	48.85
1364.9	5	48.618	48.79
1365	5	48.576	48.73
1365.1	5	48.534	48.675
1365.2	5	48.513	48.625
1365.3	5	48.471	48.575
1365.4	5	48.45	48.525
1365.5	5	48.429	48.475
1365.6	5	48.408	48.425
1365.7	5	48.387	48.375
1365.8	5	48.345	48.325
1365.9	5	48.324	48.275
1366	5	48.303	48.225
1366.1	5	48.282	48.195
1366.2	5	48.24	48.185
1366.3	5	48.22	48.175
1366.4	5	48.22	48.165
1366.5	5	48.199	48.155
1366.6	5	48.199	48.145
1366.7	5	48.178	48.135
1366.8	5	48.178	48.125
1366.9	5	48.178	48.115
1367	5	48.157	48.105
1367.1	5	48.157	48.095
1367.2	5	48.157	48.085
1367.3	5	48.157	48.075
1367.4	5	48.136	48.065
1367.5	5	48.136	48.055
1367.6	5	48.136	48.045
1367.7	5	48.136	48.035
1367.8	5	48.136	48.025

1367.9	5	48.115	48.015
1368	5	48.115	48.005
1368.1	5	48.115	48
1368.2	5	48.115	48
1368.3	5	48.094	48
1368.4	5	48.094	48
1368.5	5	48.094	48
1368.6	5	48.073	48
1368.7	5	48.073	48
1368.8	5	48.073	48
1368.9	5	48.073	48
1369	5	48.073	48
1369.1	5	48.073	48.005
1369.2	5	48.073	48.015
1369.3	5	48.094	48.025
1369.4	5	48.094	48.035
1369.5	5	48.094	48.045
1369.6	5	48.115	48.055
1369.7	5	48.115	48.065
1369.8	5	48.136	48.075
1369.9	5	48.136	48.085
1370	5	48.136	48.095
1370.1	5	48.157	48.115
1370.2	5	48.157	48.145
1370.3	5	48.199	48.175
1370.4	5	48.22	48.205
1370.5	5	48.24	48.235
1370.6	5	48.24	48.265
1370.7	5	48.282	48.295
1370.8	5	48.324	48.325
1370.9	5	48.345	48.355
1371	5	48.366	48.385
1371.1	5	48.366	48.425
1371.2	5	48.429	48.475
1371.3	5	48.45	48.525
1371.4	5	48.471	48.575
1371.5	5	48.513	48.625
1371.6	5	48.513	48.675
1371.7	5	48.555	48.725
1371.8	5	48.597	48.775
1371.9	5	48.618	48.825
1372	5	48.618	48.875
1372.1	5	48.659	48.905
1372.2	5	48.722	48.915
1372.3	5	48.743	48.925

1372.4	5	48.743	48.935
1372.5	5	48.764	48.945
1372.6	5	48.806	48.955
1372.7	5	48.869	48.965
1372.8	5	48.89	48.975
1372.9	5	48.89	48.985
1373	5	48.911	48.995
1373.1	5	48.932	49.005
1373.2	5	48.995	49.015
1373.3	5	48.995	49.025
1373.4	5	49.016	49.035
1373.5	5	49.036	49.045
1373.6	5	49.057	49.055
1373.7	5	49.099	49.065
1373.8	5	49.099	49.075
1373.9	5	49.099	49.085
1374	5	49.141	49.095
1374.1	5	49.162	49.1
1374.2	5	49.162	49.1
1374.3	5	49.183	49.1
1374.4	5	49.204	49.1
1374.5	5	49.225	49.1
1374.6	5	49.246	49.1
1374.7	5	49.267	49.1
1374.8	5	49.267	49.1
1374.9	5	49.288	49.1
1375	5	49.309	49.1
1375.1	5	49.33	49.095
1375.2	5	49.351	49.085
1375.3	5	49.351	49.075
1375.4	5	49.372	49.065
1375.5	5	49.372	49.055
1375.6	5	49.393	49.045
1375.7	5	49.393	49.035
1375.8	5	49.393	49.025
1375.9	5	49.414	49.015
1376	5	49.414	49.005
1376.1	5	49.414	49
1376.2	5	49.414	49
1376.3	5	49.434	49
1376.4	5	49.434	49
1376.5	5	49.434	49
1376.6	5	49.434	49
1376.7	5	49.414	49
1376.8	5	49.414	49

1376.9	5	49.393	49
1377	5	49.393	49
1377.1	5	49.372	48.995
1377.2	5	49.351	48.985
1377.3	5	49.33	48.975
1377.4	5	49.33	48.965
1377.5	5	49.309	48.955
1377.6	5	49.288	48.945
1377.7	5	49.267	48.935
1377.8	5	49.246	48.925
1377.9	5	49.225	48.915
1378	5	49.183	48.905
1378.1	5	49.162	48.885
1378.2	5	49.141	48.855
1378.3	5	49.099	48.825
1378.4	5	49.078	48.795
1378.5	5	49.057	48.765
1378.6	5	49.016	48.735
1378.7	5	48.995	48.705
1378.8	5	48.974	48.675
1378.9	5	48.953	48.645
1379	5	48.932	48.615
1379.1	5	48.911	48.585
1379.2	5	48.89	48.555
1379.3	5	48.869	48.525
1379.4	5	48.869	48.495
1379.5	5	48.848	48.465
1379.6	5	48.827	48.435
1379.7	5	48.827	48.405
1379.8	5	48.806	48.375
1379.9	5	48.806	48.345
1380	5	48.785	48.315
1380.1	5	48.785	48.285
1380.2	5	48.785	48.255
1380.3	5	48.785	48.225
1380.4	5	48.764	48.195
1380.5	5	48.743	48.165
1380.6	5	48.743	48.135
1380.7	5	48.743	48.105
1380.8	5	48.722	48.075
1380.9	5	48.68	48.045
1381	5	48.68	48.015
1381.1	5	48.638	47.995
1381.2	5	48.638	47.985
1381.3	5	48.618	47.975



1381.4	5	48.597	47.965
1381.5	5	48.576	47.955
1381.6	5	48.576	47.945
1381.7	5	48.555	47.935
1381.8	5	48.471	47.925
1381.9	5	48.429	47.915
1382	5	48.429	47.905
1382.1	5	48.387	47.895
1382.2	5	48.324	47.885
1382.3	5	48.24	47.875
1382.4	5	48.22	47.865
1382.5	5	48.22	47.855
1382.6	5	48.178	47.845
1382.7	5	48.115	47.835
1382.8	5	48.052	47.825
1382.9	5	48.052	47.815
1383	5	48.031	47.805
1383.1	5	47.989	47.795
1383.2	5	47.947	47.785
1383.3	5	47.947	47.775
1383.4	5	47.926	47.765
1383.5	5	47.905	47.755
1383.6	5	47.863	47.745
1383.7	5	47.842	47.735
1383.8	5	47.822	47.725
1383.9	5	47.801	47.715
1384	5	47.78	47.705
1384.1	5	47.78	47.71
1384.2	5	47.78	47.73
1384.3	5	47.78	47.75
1384.4	5	47.801	47.77
1384.5	5	47.822	47.79
1384.6	5	47.842	47.81
1384.7	5	47.863	47.83
1384.8	5	47.884	47.85
1384.9	5	47.926	47.87
1385	5	47.947	47.89
1385.1	5	47.989	47.92
1385.2	5	48.031	47.96
1385.3	5	48.073	48
1385.4	5	48.115	48.04
1385.5	5	48.157	48.08
1385.6	5	48.199	48.12
1385.7	5	48.24	48.16
1385.8	5	48.282	48.2

1385.9	5	48.324	48.24
1386	5	48.366	48.28
1386.1	5	48.408	48.335
1386.2	5	48.45	48.405
1386.3	5	48.492	48.475
1386.4	5	48.534	48.545
1386.5	5	48.576	48.615
1386.6	5	48.618	48.685
1386.7	5	48.68	48.755
1386.8	5	48.722	48.825
1386.9	5	48.764	48.895
1387	5	48.806	48.969
1387.1	5	48.848	49.005
1387.2	5	48.89	49.015
1387.3	5	48.932	49.025
1387.4	5	48.974	49.035
1387.5	5	49.016	49.045
1387.6	5	49.057	49.055
1387.7	5	49.099	49.065
1387.8	5	49.12	49.075
1387.9	5	49.162	49.085
1388	5	49.183	49.095
1388.1	5	49.204	49.095
1388.2	5	49.246	49.085
1388.3	5	49.267	49.075
1388.4	5	49.288	49.065
1388.5	5	49.309	49.055
1388.6	5	49.33	49.045
1388.7	5	49.33	49.035
1388.8	5	49.351	49.025
1388.9	5	49.351	49.015
1389	5	49.351	49.005
1389.1	5	49.33	48.995
1389.2	5	49.309	48.985
1389.3	5	49.288	48.975
1389.4	5	49.288	48.965
1389.5	5	49.204	48.955
1389.6	5	49.141	48.945
1389.7	5	49.078	48.935
1389.8	5	49.078	48.925
1389.9	5	48.911	48.915
1390	5	48.848	48.905
1390.1	5	48.764	48.855
1390.2	5	48.68	48.765
1390.3	5	48.68	48.675

1390.4	5	48.555	48.585
1390.5	5	48.471	48.495
1390.6	5	48.408	48.405
1390.7	5	48.408	48.315
1390.8	5	48.345	48.225
1390.9	5	48.22	48.135
1391	5	48.157	48.045
1391.1	5	48.157	47.955
1391.2	5	48.094	47.865
1391.3	5	48.01	47.775
1391.4	5	47.863	47.685
1391.5	5	47.78	47.595
1391.6	5	47.78	47.505
1391.7	5	47.717	47.415
1391.8	5	47.549	47.325
1391.9	5	47.486	47.235
1392	5	47.486	47.145
1392.1	5	47.403	47.055
1392.2	5	47.319	46.965
1392.3	5	47.172	46.875
1392.4	5	47.172	46.785
1392.5	5	47.088	46.695
1392.6	5	47.026	46.605
1392.7	5	46.942	46.515
1392.8	5	46.795	46.425
1392.9	5	46.795	46.335
1393	5	46.711	46.245
1393.1	5	46.628	46.195
1393.2	5	46.565	46.185
1393.3	5	46.481	46.175
1393.4	5	46.397	46.165
1393.5	5	46.334	46.155
1393.6	5	46.271	46.145
1393.7	5	46.23	46.135
1393.8	5	46.167	46.125
1393.9	5	46.125	46.115
1394	5	46.083	46.105
1394.1	5	46.083	46.1
1394.2	5	46.02	46.1
1394.3	5	45.999	46.1
1394.4	5	45.978	46.1
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1394.7	5	45.957	46.1
1394.8	5	45.936	46.1

1394.9	5	45.936	46.1
1395	5	45.936	46.1
1395.1	5	45.936	46.105
1395.2	5	45.936	46.115
1395.3	5	45.936	46.125
1395.4	5	45.936	46.135
1395.5	5	45.936	46.145
1395.6	5	45.936	46.155
1395.7	5	45.936	46.165
1395.8	5	45.957	46.175
1395.9	5	45.978	46.185
1396	5	45.999	46.195
1396.1	5	46.02	46.235
1396.2	5	46.041	46.305
1396.3	5	46.062	46.375
1396.4	5	46.104	46.445
1396.5	5	46.125	46.515
1396.6	5	46.167	46.585
1396.7	5	46.209	46.655
1396.8	5	46.251	46.725
1396.9	5	46.313	46.795
1397	5	46.355	46.865
1397.1	5	46.418	46.945
1397.2	5	46.481	47.035
1397.3	5	46.544	47.125
1397.4	5	46.607	47.215
1397.5	5	46.669	47.305
1397.6	5	46.732	47.395
1397.7	5	46.795	47.485
1397.8	5	46.858	47.575
1397.9	5	46.921	47.665
1398	5	46.921	47.755
1398.1	5	47.047	47.86
1398.2	5	47.109	47.98
1398.3	5	47.172	48.1
1398.4	5	47.235	48.22
1398.5	5	47.319	48.34
1398.6	5	47.382	48.46
1398.7	5	47.465	48.58
1398.8	5	47.549	48.7
1398.9	5	47.549	48.82
1399	5	47.717	48.94
1399.1	5	47.801	49.035
1399.2	5	47.884	49.105
1399.3	5	47.884	49.175

1399.4	5	48.073	49.245
1399.5	5	48.157	49.315
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1399.7	5	48.366	49.455
1399.8	5	48.366	49.525
1399.9	5	48.555	49.595
1400	5	48.659	49.665
1400.1	5	48.764	49.745
1400.2	5	48.764	49.835
1400.3	5	48.869	49.925
1400.4	5	49.078	50.015
1400.5	5	49.225	50.105
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1400.7	5	49.372	50.285
1400.8	5	49.518	50.375
1400.9	5	49.874	50.465
1401	5	49.874	50.555
1401.1	5	50.063	50.645
1401.2	5	50.23	50.735
1401.3	5	50.587	50.825
1401.4	5	50.754	50.915
1401.5	5	50.754	51.005
1401.6	5	50.922	51.095
1401.7	5	51.089	51.185
1401.8	5	51.403	51.275
1401.9	5	51.403	51.365
1402	5	51.55	51.455
1402.1	5	51.718	51.535
1402.2	5	51.843	51.605
1402.3	5	51.969	51.675
1402.4	5	52.053	51.745
1402.5	5	52.137	51.815
1402.6	5	52.199	51.885
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1402.8	5	52.367	52.025
1402.9	5	52.472	52.095
1403	5	52.556	52.165
1403.1	5	52.639	52.225
1403.2	5	52.723	52.275
1403.3	5	52.786	52.325
1403.4	5	52.828	52.375
1403.5	5	52.891	52.425
1403.6	5	52.933	52.475
1403.7	5	52.974	52.525
1403.8	5	53.016	52.575

1403.9	5	53.058	52.625
1404	5	53.079	52.675
1404.1	5	53.121	52.715
1404.2	5	53.163	52.745
1404.3	5	53.205	52.775
1404.4	5	53.268	52.805
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1404.7	5	53.393	52.895
1404.8	5	53.435	52.925
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1405.1	5	53.582	53.03
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1405.3	5	53.666	53.15
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1405.6	5	53.749	53.33
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1405.8	5	53.791	53.45
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1406	5	53.812	53.57
1406.1	5	53.833	53.62
1406.2	5	53.854	53.66
1406.3	5	53.854	53.7
1406.4	5	53.875	53.74
1406.5	5	53.875	53.78
1406.6	5	53.875	53.82
1406.7	5	53.896	53.86
1406.8	5	53.896	53.9
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1407	5	53.896	53.98
1407.1	5	53.875	54.005
1407.2	5	53.875	54.015
1407.3	5	53.875	54.025
1407.4	5	53.854	54.035
1407.5	5	53.833	54.045
1407.6	5	53.833	54.055
1407.7	5	53.812	54.065
1407.8	5	53.812	54.075
1407.9	5	53.812	54.085
1408	5	53.833	54.095
1408.1	5	53.854	54.115
1408.2	5	53.875	54.145
1408.3	5	53.896	54.175

1408.4	5	53.917	54.205
1408.5	5	53.917	54.235
1408.6	5	53.98	54.265
1408.7	5	54.001	54.295
1408.8	5	54.043	54.325
1408.9	5	54.064	54.355
1409	5	54.064	54.385
1409.1	5	54.127	54.415
1409.2	5	54.168	54.445
1409.3	5	54.21	54.475
1409.4	5	54.21	54.505
1409.5	5	54.231	54.535
1409.6	5	54.315	54.565
1409.7	5	54.357	54.595
1409.8	5	54.357	54.625
1409.9	5	54.399	54.655
1410	5	54.462	54.685
1410.1	5	54.504	54.72
1410.2	5	54.504	54.76
1410.3	5	54.545	54.8
1410.4	5	54.587	54.84
1410.5	5	54.65	54.88
1410.6	5	54.692	54.92
1410.7	5	54.692	54.96
1410.8	5	54.734	55
1410.9	5	54.776	55.04
1411	5	54.839	55.08
1411.1	5	54.839	55.115
1411.2	5	54.881	55.145
1411.3	5	54.902	55.175
1411.4	5	54.964	55.205
1411.5	5	54.964	55.235
1411.6	5	54.985	55.265
1411.7	5	55.006	55.295
1411.8	5	55.048	55.325
1411.9	5	55.09	55.355
1412	5	55.09	55.385
1412.1	5	55.09	55.4
1412.2	5	55.111	55.4
1412.3	5	55.111	55.4
1412.4	5	55.111	55.4
1412.5	5	55.111	55.4
1412.6	5	55.111	55.4
1412.7	5	55.111	55.4
1412.8	5	55.09	55.4

1412.9	5	55.069	55.4
1413	5	55.027	55.4
1413.1	5	54.985	55.38
1413.2	5	54.923	55.34
1413.3	5	54.86	55.3
1413.4	5	54.776	55.26
1413.5	5	54.713	55.22
1413.6	5	54.65	55.18
1413.7	5	54.566	55.14
1413.8	5	54.504	55.1
1413.9	5	54.441	55.06
1414	5	54.378	55.02
1414.1	5	54.315	54.975
1414.2	5	54.252	54.925
1414.3	5	54.21	54.875
1414.4	5	54.147	54.825
1414.5	5	54.085	54.775
1414.6	5	54.043	54.725
1414.7	5	53.98	54.675
1414.8	5	53.917	54.625
1414.9	5	53.833	54.575
1415	5	53.77	54.525
1415.1	5	53.687	54.455
1415.2	5	53.624	54.365
1415.3	5	53.54	54.275
1415.4	5	53.456	54.185
1415.5	5	53.372	54.095
1415.6	5	53.289	54.005
1415.7	5	53.205	53.915
1415.8	5	53.121	53.825
1415.9	5	53.037	53.735
1416	5	52.954	53.645
1416.1	5	52.87	53.545
1416.2	5	52.786	53.435
1416.3	5	52.702	53.325
1416.4	5	52.618	53.215
1416.5	5	52.535	53.105
1416.6	5	52.451	52.995
1416.7	5	52.367	52.885
1416.8	5	52.241	52.775
1416.9	5	52.032	52.665
1417	5	51.739	52.555
1417.1	5	51.445	52.385
1417.2	5	51.445	52.155
1417.3	5	51.131	51.925



1417.4	5	51.026	51.695
1417.5	5	50.922	51.465
1417.6	5	50.838	51.235
1417.7	5	50.754	51.005
1417.8	5	50.67	50.775
1417.9	5	50.566	50.545
1418	5	50.461	50.315
1418.1	5	50.461	50.1
1418.2	5	50.209	49.9
1418.3	5	50.084	49.7
1418.4	5	49.958	49.5
1418.5	5	49.958	49.3
1418.6	5	49.832	49.1
1418.7	5	49.56	48.9
1418.8	5	49.434	48.7
1418.9	5	49.309	48.5
1419	5	49.309	48.3
1419.1	5	49.036	48.115
1419.2	5	48.911	47.945
1419.3	5	48.785	47.775
1419.4	5	48.785	47.605
1419.5	5	48.638	47.435
1419.6	5	48.387	47.265
1419.7	5	48.282	47.095
1419.8	5	48.282	46.925
1419.9	5	48.157	46.755
1420	5	48.031	46.585
1420.1	5	47.633	46.485
1420.2	5	47.424	46.455
1420.3	5	47.424	46.425
1420.4	5	47.214	46.395
1420.5	5	47.047	46.365
1420.6	5	46.837	46.335
1420.7	5	46.837	46.305
1420.8	5	46.753	46.275
1420.9	5	46.669	46.245
1421	5	46.586	46.215
1421.1	5	46.439	46.19
1421.2	5	46.439	46.17
1421.3	5	46.355	46.15
1421.4	5	46.271	46.13
1421.5	5	46.146	46.11
1421.6	5	46.146	46.09
1421.7	5	46.083	46.07
1421.8	5	46.041	46.05

1421.9	5	45.978	46.03
1422	5	45.936	46.01
1422.1	5	45.894	46
1422.2	5	45.853	46
1422.3	5	45.811	46
1422.4	5	45.769	46
1422.5	5	45.727	46
1422.6	5	45.685	46
1422.7	5	45.664	46
1422.8	5	45.664	46
1422.9	5	45.664	46
1423	5	45.685	46
1423.1	5	45.727	46.015
1423.2	5	45.748	46.045
1423.3	5	45.79	46.075
1423.4	5	45.832	46.105
1423.5	5	45.873	46.135
1423.6	5	45.936	46.165
1423.7	5	45.999	46.195
1423.8	5	46.041	46.225
1423.9	5	46.104	46.255
1424	5	46.146	46.285
1424.1	5	46.209	46.325
1424.2	5	46.271	46.375
1424.3	5	46.313	46.425
1424.4	5	46.376	46.475
1424.5	5	46.439	46.525
1424.6	5	46.481	46.575
1424.7	5	46.544	46.625
1424.8	5	46.607	46.675
1424.9	5	46.649	46.725
1425	5	46.711	46.775
1425.1	5	46.774	46.835
1425.2	5	46.837	46.905
1425.3	5	46.879	46.975
1425.4	5	46.942	47.045
1425.5	5	47.005	47.115
1425.6	5	47.067	47.185
1425.7	5	47.109	47.255
1425.8	5	47.172	47.325
1425.9	5	47.235	47.395
1426	5	47.298	47.465
1426.1	5	47.361	47.535
1426.2	5	47.424	47.605
1426.3	5	47.486	47.675

1426.4	5	47.549	47.745
1426.5	5	47.612	47.815
1426.6	5	47.675	47.885
1426.7	5	47.717	47.955
1426.8	5	47.717	48.025
1426.9	5	47.842	48.095
1427	5	47.884	48.165
1427.1	5	47.926	48.23
1427.2	5	47.989	48.29
1427.3	5	48.031	48.35
1427.4	5	48.094	48.41
1427.5	5	48.157	48.47
1427.6	5	48.22	48.53
1427.7	5	48.22	48.59
1427.8	5	48.324	48.65
1427.9	5	48.387	48.71
1428	5	48.429	48.77
1428.1	5	48.429	48.835
1428.2	5	48.492	48.905
1428.3	5	48.618	48.975
1428.4	5	48.659	49.045
1428.5	5	48.722	49.115
1428.6	5	48.722	49.185
1428.7	5	48.785	49.255
1428.8	5	48.911	49.325
1428.9	5	48.995	49.395
1429	5	48.995	49.465
1429.1	5	49.057	49.535
1429.2	5	49.12	49.605
1429.3	5	49.267	49.675
1429.4	5	49.33	49.745
1429.5	5	49.33	49.815
1429.6	5	49.393	49.885
1429.7	5	49.518	49.955
1429.8	5	49.602	50.025
1429.9	5	49.602	50.095
1430	5	49.665	50.165
1430.1	5	49.728	50.225
1430.2	5	49.874	50.275
1430.3	5	49.874	50.325
1430.4	5	49.937	50.375
1430.5	5	50.021	50.425
1430.6	5	50.084	50.475
1430.7	5	50.23	50.525
1430.8	5	50.23	50.575

1430.9	5	50.293	50.625
1431	5	50.377	50.675
1431.1	5	50.44	50.72
1431.2	5	50.503	50.76
1431.3	5	50.566	50.8
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1431.7	5	50.796	50.96
1431.8	5	50.859	51
1431.9	5	50.901	51.04
1432	5	50.964	51.08
1432.1	5	51.026	51.13
1432.2	5	51.089	51.19
1432.3	5	51.152	51.25
1432.4	5	51.194	51.31
1432.5	5	51.257	51.37
1432.6	5	51.32	51.43
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1432.9	5	51.508	51.61
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1433.1	5	51.634	51.725
1433.2	5	51.676	51.775
1433.3	5	51.739	51.825
1433.4	5	51.801	51.875
1433.5	5	51.864	51.925
1433.6	5	51.927	51.975
1433.7	5	51.99	52.025
1433.8	5	52.053	52.075
1433.9	5	52.116	52.125
1434	5	52.158	52.175
1434.1	5	52.22	52.215
1434.2	5	52.283	52.245
1434.3	5	52.346	52.275
1434.4	5	52.388	52.305
1434.5	5	52.451	52.335
1434.6	5	52.472	52.365
1434.7	5	52.514	52.395
1434.8	5	52.514	52.425
1434.9	5	52.535	52.455
1435	5	52.556	52.485
1435.1	5	52.576	52.48
1435.2	5	52.576	52.44
1435.3	5	52.556	52.4

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1435.5	5	52.535	52.32
1435.6	5	52.493	52.28
1435.7	5	52.472	52.24
1435.8	5	52.43	52.2
1435.9	5	52.388	52.16
1436	5	52.388	52.12
1436.1	5	52.283	52.075
1436.2	5	52.22	52.025
1436.3	5	52.178	51.975
1436.4	5	52.116	51.925
1436.5	5	52.053	51.875
1436.6	5	51.99	51.825
1436.7	5	51.927	51.775
1436.8	5	51.864	51.725
1436.9	5	51.864	51.675
1437	5	51.739	51.625
1437.1	5	51.697	51.575
1437.2	5	51.655	51.525
1437.3	5	51.655	51.475
1437.4	5	51.613	51.425
1437.5	5	51.529	51.375
1437.6	5	51.487	51.325
1437.7	5	51.445	51.275
1437.8	5	51.445	51.225
1437.9	5	51.403	51.175
1438	5	51.32	51.125
1438.1	5	51.278	51.095
1438.2	5	51.278	51.085
1438.3	5	51.236	51.075
1438.4	5	51.194	51.065
1438.5	5	51.11	51.055
1438.6	5	51.089	51.045
1438.7	5	51.089	51.035
1438.8	5	51.068	51.025
1438.9	5	51.047	51.015
1439	5	51.005	51.005
1439.1	5	51.005	51
1439.2	5	51.005	51
1439.3	5	50.985	51
1439.4	5	50.985	51
1439.5	5	50.964	51
1439.6	5	50.964	51
1439.7	5	50.964	51
1439.8	5	50.943	51

1439.9	5	50.922	51
1440	5	50.922	51
1440.1	5	50.922	51.005
1440.2	5	50.901	51.015
1440.3	5	50.901	51.025
1440.4	5	50.901	51.035
1440.5	5	50.88	51.045
1440.6	5	50.88	51.055
1440.7	5	50.859	51.065
1440.8	5	50.859	51.075
1440.9	5	50.859	51.085
1441	5	50.838	51.095
1441.1	5	50.838	51.115
1441.2	5	50.838	51.145
1441.3	5	50.838	51.175
1441.4	5	50.838	51.205
1441.5	5	50.838	51.235
1441.6	5	50.838	51.265
1441.7	5	50.838	51.295
1441.8	5	50.838	51.325
1441.9	5	50.838	51.355
1442	5	50.817	51.385
1442.1	5	50.817	51.415
1442.2	5	50.817	51.445
1442.3	5	50.817	51.475
1442.4	5	50.817	51.505
1442.5	5	50.817	51.535
1442.6	5	50.817	51.565
1442.7	5	50.817	51.595
1442.8	5	50.838	51.625
1442.9	5	50.88	51.655
1443	5	50.901	51.685
1443.1	5	50.943	51.715
1443.2	5	50.985	51.745
1443.3	5	51.026	51.775
1443.4	5	51.068	51.805
1443.5	5	51.11	51.835
1443.6	5	51.152	51.865
1443.7	5	51.215	51.895
1443.8	5	51.257	51.925
1443.9	5	51.299	51.955
1444	5	51.362	51.985
1444.1	5	51.403	52.01
1444.2	5	51.466	52.03
1444.3	5	51.508	52.05

1444.4	5	51.55	52.07
1444.5	5	51.613	52.09
1444.6	5	51.655	52.11
1444.7	5	51.697	52.13
1444.8	5	51.739	52.15
1444.9	5	51.801	52.17
1445	5	51.843	52.19
1445.1	5	51.885	52.215
1445.2	5	51.948	52.245
1445.3	5	51.99	52.275
1445.4	5	52.032	52.305
1445.5	5	52.074	52.335
1445.6	5	52.137	52.365
1445.7	5	52.178	52.395
1445.8	5	52.241	52.425
1445.9	5	52.283	52.455
1446	5	52.283	52.485
1446.1	5	52.283	52.515
1446.2	5	52.43	52.545
1446.3	5	52.472	52.575
1446.4	5	52.535	52.605
1446.5	5	52.535	52.635
1446.6	5	52.618	52.665
1446.7	5	52.639	52.695
1446.8	5	52.681	52.725
1446.9	5	52.702	52.755
1447	5	52.702	52.785
1447.1	5	52.765	52.795
1447.2	5	52.786	52.785
1447.3	5	52.807	52.775
1447.4	5	52.807	52.765
1447.5	5	52.828	52.755
1447.6	5	52.87	52.745
1447.7	5	52.87	52.735
1447.8	5	52.87	52.725
1447.9	5	52.891	52.715
1448	5	52.912	52.705
1448.1	5	52.933	52.695
1448.2	5	52.933	52.685
1448.3	5	52.933	52.675
1448.4	5	52.954	52.665
1448.5	5	52.974	52.655
1448.6	5	52.974	52.645
1448.7	5	52.974	52.635
1448.8	5	52.995	52.625

1448.9	5	52.995	52.615
1449	5	52.974	52.605
1449.1	5	52.974	52.585
1449.2	5	52.954	52.555
1449.3	5	52.933	52.525
1449.4	5	52.933	52.495
1449.5	5	52.912	52.465
1449.6	5	52.891	52.435
1449.7	5	52.87	52.405
1449.8	5	52.849	52.375
1449.9	5	52.807	52.345
1450	5	52.807	52.315
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1450.2	5	52.765	52.3
1450.3	5	52.744	52.3
1450.4	5	52.702	52.3
1450.5	5	52.681	52.3
1450.6	5	52.639	52.3
1450.7	5	52.618	52.3
1450.8	5	52.597	52.3
1450.9	5	52.556	52.3
1451	5	52.514	52.3
1451.1	5	52.493	52.305
1451.2	5	52.472	52.315
1451.3	5	52.43	52.325
1451.4	5	52.409	52.335
1451.5	5	52.367	52.345
1451.6	5	52.346	52.355
1451.7	5	52.304	52.365
1451.8	5	52.283	52.375
1451.9	5	52.262	52.385
1452	5	52.241	52.395
1452.1	5	52.22	52.405
1452.2	5	52.199	52.415
1452.3	5	52.178	52.425
1452.4	5	52.158	52.435
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1452.6	5	52.158	52.455
1452.7	5	52.137	52.465
1452.8	5	52.137	52.475
1452.9	5	52.158	52.485
1453	5	52.158	52.495
1453.1	5	52.158	52.51
1453.2	5	52.158	52.53
1453.3	5	52.178	52.55



1453.4	5	52.178	52.57
1453.5	5	52.199	52.59
1453.6	5	52.22	52.61
1453.7	5	52.241	52.63
1453.8	5	52.262	52.65
1453.9	5	52.283	52.67
1454	5	52.283	52.69
1454.1	5	52.304	52.7
1454.2	5	52.325	52.7
1454.3	5	52.325	52.7
1454.4	5	52.346	52.7
1454.5	5	52.346	52.7
1454.6	5	52.367	52.7
1454.7	5	52.367	52.7
1454.8	5	52.367	52.7
1454.9	5	52.367	52.7
1455	5	52.346	52.7
1455.1	5	52.346	52.685
1455.2	5	52.346	52.655
1455.3	5	52.346	52.625
1455.4	5	52.325	52.595
1455.5	5	52.325	52.565
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1455.7	5	52.283	52.505
1455.8	5	52.283	52.475
1455.9	5	52.262	52.445
1456	5	52.262	52.415
1456.1	5	52.199	52.385
1456.2	5	52.178	52.355
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1456.6	5	52.074	52.235
1456.7	5	52.053	52.205
1456.8	5	52.032	52.175
1456.9	5	52.032	52.145
1457	5	51.99	52.115
1457.1	5	51.885	52.08
1457.2	5	51.822	52.04
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1457.6	5	51.634	51.88
1457.7	5	51.571	51.84
1457.8	5	51.571	51.8

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1458	5	51.466	51.72
1458.1	5	51.362	51.67
1458.2	5	51.362	51.61
1458.3	5	51.32	51.55
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1458.6	5	51.173	51.37
1458.7	5	51.11	51.31
1458.8	5	51.068	51.25
1458.9	5	51.005	51.19
1459	5	50.922	51.13
1459.1	5	50.922	51.07
1459.2	5	50.88	51.01
1459.3	5	50.817	50.95
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1459.8	5	50.566	50.65
1459.9	5	50.503	50.59
1460	5	50.44	50.53
1460.1	5	50.398	50.48
1460.2	5	50.335	50.44
1460.3	5	50.293	50.4
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1460.8	5	50.063	50.2
1460.9	5	50.021	50.16
1461	5	49.979	50.12
1461.1	5	49.916	50.085
1461.2	5	49.874	50.055
1461.3	5	49.832	50.025
1461.4	5	49.791	49.995
1461.5	5	49.749	49.965
1461.6	5	49.728	49.935
1461.7	5	49.686	49.905
1461.8	5	49.644	49.875
1461.9	5	49.602	49.845
1462	5	49.581	49.815
1462.1	5	49.539	49.795
1462.2	5	49.497	49.785
1462.3	5	49.455	49.775

1462.4	5	49.434	49.765
1462.5	5	49.393	49.755
1462.6	5	49.372	49.745
1462.7	5	49.351	49.735
1462.8	5	49.309	49.725
1462.9	5	49.288	49.715
1463	5	49.267	49.705
1463.1	5	49.246	49.695
1463.2	5	49.204	49.685
1463.3	5	49.183	49.675
1463.4	5	49.162	49.665
1463.5	5	49.162	49.655
1463.6	5	49.141	49.645
1463.7	5	49.12	49.635
1463.8	5	49.099	49.625
1463.9	5	49.078	49.615
1464	5	49.057	49.605
1464.1	5	49.057	49.595
1464.2	5	49.036	49.585
1464.3	5	49.036	49.575
1464.4	5	49.016	49.565
1464.5	5	49.016	49.555
1464.6	5	49.036	49.545
1464.7	5	49.036	49.535
1464.8	5	49.078	49.525
1464.9	5	49.099	49.515
1465	5	49.141	49.505
1465.1	5	49.162	49.5
1465.2	5	49.162	49.5
1465.3	5	49.225	49.5
1465.4	5	49.246	49.5
1465.5	5	49.288	49.5
1465.6	5	49.288	49.5
1465.7	5	49.33	49.5
1465.8	5	49.393	49.5
1465.9	5	49.414	49.5
1466	5	49.455	49.5
1466.1	5	49.455	49.51
1466.2	5	49.497	49.53
1466.3	5	49.539	49.55
1466.4	5	49.56	49.57
1466.5	5	49.56	49.59
1466.6	5	49.581	49.61
1466.7	5	49.644	49.63
1466.8	5	49.665	49.65

1466.9	5	49.665	49.67
1467	5	49.686	49.69
1467.1	5	49.707	49.715
1467.2	5	49.77	49.745
1467.3	5	49.791	49.775
1467.4	5	49.791	49.805
1467.5	5	49.832	49.835
1467.6	5	49.853	49.865
1467.7	5	49.916	49.895
1467.8	5	49.916	49.925
1467.9	5	49.937	49.955
1468	5	49.979	49.985
1468.1	5	50.042	50.01
1468.2	5	50.063	50.03
1468.3	5	50.063	50.05
1468.4	5	50.084	50.07
1468.5	5	50.126	50.09
1468.6	5	50.189	50.11
1468.7	5	50.189	50.13
1468.8	5	50.23	50.15
1468.9	5	50.251	50.17
1469	5	50.293	50.19
1469.1	5	50.314	50.22
1469.2	5	50.356	50.26
1469.3	5	50.398	50.3
1469.4	5	50.44	50.34
1469.5	5	50.482	50.38
1469.6	5	50.524	50.42
1469.7	5	50.566	50.46
1469.8	5	50.607	50.5
1469.9	5	50.649	50.54
1470	5	50.712	50.58
1470.1	5	50.754	50.625
1470.2	5	50.796	50.675
1470.3	5	50.859	50.725
1470.4	5	50.901	50.775
1470.5	5	50.943	50.825
1470.6	5	51.005	50.875
1470.7	5	51.047	50.925
1470.8	5	51.11	50.975
1470.9	5	51.152	51.025
1471	5	51.215	51.075
1471.1	5	51.257	51.125
1471.2	5	51.299	51.175
1471.3	5	51.362	51.225

1471.4	5	51.403	51.275
1471.5	5	51.466	51.325
1471.6	5	51.508	51.375
1471.7	5	51.55	51.425
1471.8	5	51.613	51.475
1471.9	5	51.655	51.525
1472	5	51.655	51.575
1472.1	5	51.739	51.615
1472.2	5	51.801	51.645
1472.3	5	51.843	51.675
1472.4	5	51.885	51.705
1472.5	5	51.927	51.735
1472.6	5	51.969	51.765
1472.7	5	52.011	51.795
1472.8	5	52.074	51.825
1472.9	5	52.116	51.855
1473	5	52.158	51.885
1473.1	5	52.199	51.905
1473.2	5	52.241	51.915
1473.3	5	52.283	51.925
1473.4	5	52.325	51.935
1473.5	5	52.346	51.945
1473.6	5	52.388	51.955
1473.7	5	52.409	51.965
1473.8	5	52.43	51.975
1473.9	5	52.451	51.985
1474	5	52.472	51.995
1474.1	5	52.493	52.005
1474.2	5	52.493	52.015
1474.3	5	52.493	52.025
1474.4	5	52.535	52.035
1474.5	5	52.556	52.045
1474.6	5	52.576	52.055
1474.7	5	52.597	52.065
1474.8	5	52.597	52.075
1474.9	5	52.639	52.085
1475	5	52.639	52.095
1475.1	5	52.66	52.115
1475.2	5	52.66	52.145
1475.3	5	52.681	52.175
1475.4	5	52.723	52.205
1475.5	5	52.744	52.235
1475.6	5	52.744	52.265
1475.7	5	52.744	52.295
1475.8	5	52.786	52.325

1475.9	5	52.807	52.355
1476	5	52.828	52.385
1476.1	5	52.828	52.425
1476.2	5	52.849	52.475
1476.3	5	52.891	52.525
1476.4	5	52.891	52.575
1476.5	5	52.891	52.625
1476.6	5	52.912	52.675
1476.7	5	52.933	52.725
1476.8	5	52.974	52.775
1476.9	5	52.995	52.825
1477	5	52.995	52.875
1477.1	5	53.016	52.92
1477.2	5	53.037	52.96
1477.3	5	53.079	53
1477.4	5	53.079	53.04
1477.5	5	53.121	53.08
1477.6	5	53.142	53.12
1477.7	5	53.205	53.16
1477.8	5	53.205	53.2
1477.9	5	53.226	53.24
1478	5	53.247	53.28
1478.1	5	53.289	53.32
1478.2	5	53.352	53.36
1478.3	5	53.352	53.4
1478.4	5	53.372	53.44
1478.5	5	53.414	53.48
1478.6	5	53.456	53.52
1478.7	5	53.477	53.56
1478.8	5	53.519	53.6
1478.9	5	53.561	53.64
1479	5	53.603	53.68
1479.1	5	53.666	53.725
1479.2	5	53.708	53.775
1479.3	5	53.749	53.825
1479.4	5	53.791	53.875
1479.5	5	53.833	53.925
1479.6	5	53.896	53.975
1479.7	5	53.938	54.025
1479.8	5	53.98	54.075
1479.9	5	54.022	54.125
1480	5	54.064	54.175
1480.1	5	54.106	54.215
1480.2	5	54.147	54.245
1480.3	5	54.189	54.275

1480.4	5	54.252	54.305
1480.5	5	54.294	54.335
1480.6	5	54.336	54.365
1480.7	5	54.378	54.395
1480.8	5	54.42	54.425
1480.9	5	54.462	54.455
1481	5	54.504	54.485
1481.1	5	54.545	54.515
1481.2	5	54.587	54.545
1481.3	5	54.629	54.575
1481.4	5	54.671	54.605
1481.5	5	54.713	54.635
1481.6	5	54.755	54.665
1481.7	5	54.797	54.695
1481.8	5	54.839	54.725
1481.9	5	54.86	54.755
1482	5	54.902	54.785
1482.1	5	54.943	54.81
1482.2	5	54.985	54.83
1482.3	5	55.027	54.85
1482.4	5	55.069	54.871
1482.5	5	55.111	54.89
1482.6	5	55.153	54.91
1482.7	5	55.195	54.93
1482.8	5	55.237	54.95
1482.9	5	55.279	54.97
1483	5	55.3	54.99
1483.1	5	55.341	55.025
1483.2	5	55.383	55.075
1483.3	5	55.425	55.125
1483.4	5	55.467	55.175
1483.5	5	55.467	55.225
1483.6	5	55.551	55.275
1483.7	5	55.593	55.325
1483.8	5	55.635	55.375
1483.9	5	55.677	55.425
1484	5	55.718	55.475
1484.1	5	55.739	55.52
1484.2	5	55.781	55.56
1484.3	5	55.823	55.6
1484.4	5	55.823	55.64
1484.5	5	55.907	55.68
1484.6	5	55.928	55.72
1484.7	5	55.97	55.76
1484.8	5	55.97	55.8

1484.9	5	55.991	55.84
1485	5	56.075	55.88
1485.1	5	56.096	55.91
1485.2	5	56.137	55.93
1485.3	5	56.137	55.95
1485.4	5	56.158	55.97
1485.5	5	56.221	55.99
1485.6	5	56.263	56.01
1485.7	5	56.263	56.03
1485.8	5	56.284	56.05
1485.9	5	56.347	56.07
1486	5	56.389	56.09
1486.1	5	56.389	56.11
1486.2	5	56.41	56.13
1486.3	5	56.452	56.15
1486.4	5	56.494	56.17
1486.5	5	56.494	56.19
1486.6	5	56.494	56.21
1486.7	5	56.535	56.23
1486.8	5	56.556	56.25
1486.9	5	56.577	56.27
1487	5	56.577	56.29
1487.1	5	56.598	56.305
1487.2	5	56.619	56.315
1487.3	5	56.64	56.325
1487.4	5	56.661	56.335
1487.5	5	56.661	56.345
1487.6	5	56.661	56.355
1487.7	5	56.682	56.365
1487.8	5	56.682	56.375
1487.9	5	56.703	56.385
1488	5	56.703	56.395
1488.1	5	56.724	56.405
1488.2	5	56.724	56.415
1488.3	5	56.724	56.425
1488.4	5	56.724	56.435
1488.5	5	56.724	56.445
1488.6	5	56.724	56.455
1488.7	5	56.745	56.465
1488.8	5	56.745	56.475
1488.9	5	56.745	56.485
1489	5	56.745	56.495
1489.1	5	56.745	56.51
1489.2	5	56.766	56.53
1489.3	5	56.766	56.55



1489.4	5	56.766	56.57
1489.5	5	56.766	56.59
1489.6	5	56.787	56.61
1489.7	5	56.787	56.63
1489.8	5	56.787	56.65
1489.9	5	56.787	56.67
1490	5	56.808	56.69
1490.1	5	56.808	56.71
1490.2	5	56.829	56.73
1490.3	5	56.829	56.75
1490.4	5	56.85	56.77
1490.5	5	56.85	56.79
1490.6	5	56.871	56.81
1490.7	5	56.871	56.83
1490.8	5	56.892	56.85
1490.9	5	56.912	56.87
1491	5	56.912	56.89
1491.1	5	56.933	56.905
1491.2	5	56.933	56.915
1491.3	5	56.954	56.925
1491.4	5	56.954	56.935
1491.5	5	56.975	56.945
1491.6	5	56.996	56.955
1491.7	5	56.996	56.965
1491.8	5	57.017	56.975
1491.9	5	57.017	56.985
1492	5	57.038	56.995
1492.1	5	57.059	57.015
1492.2	5	57.059	57.045
1492.3	5	57.08	57.075
1492.4	5	57.08	57.105
1492.5	5	57.101	57.135
1492.6	5	57.101	57.165
1492.7	5	57.122	57.195
1492.8	5	57.143	57.225
1492.9	5	57.143	57.255
1493	5	57.164	57.285
1493.1	5	57.164	57.32
1493.2	5	57.185	57.36
1493.3	5	57.206	57.4
1493.4	5	57.206	57.44
1493.5	5	57.227	57.48
1493.6	5	57.227	57.52
1493.7	5	57.248	57.56
1493.8	5	57.269	57.6

1493.9	5	57.29	57.64
1494	5	57.29	57.68
1494.1	5	57.352	57.725
1494.2	5	57.394	57.775
1494.3	5	57.436	57.825
1494.4	5	57.436	57.875
1494.5	5	57.478	57.925
1494.6	5	57.541	57.975
1494.7	5	57.604	58.025
1494.8	5	57.646	58.075
1494.9	5	57.646	58.125
1495	5	57.687	58.175
1495.1	5	57.771	58.23
1495.2	5	57.813	58.29
1495.3	5	57.813	58.35
1495.4	5	57.855	58.41
1495.5	5	57.918	58.47
1495.6	5	57.981	58.53
1495.7	5	58.044	58.59
1495.8	5	58.044	58.65
1495.9	5	58.085	58.71
1496	5	58.127	58.77
1496.1	5	58.211	58.815
1496.2	5	58.211	58.845
1496.3	5	58.253	58.875
1496.4	5	58.295	58.905
1496.5	5	58.379	58.935
1496.6	5	58.379	58.965
1496.7	5	58.442	58.995
1496.8	5	58.483	59.025
1496.9	5	58.525	59.055
1497	5	58.567	59.085
1497.1	5	58.63	59.105
1497.2	5	58.672	59.115
1497.3	5	58.714	59.125
1497.4	5	58.756	59.135
1497.5	5	58.798	59.145
1497.6	5	58.861	59.155
1497.7	5	58.902	59.165
1497.8	5	58.944	59.175
1497.9	5	58.986	59.185
1498	5	58.986	59.195
1498.1	5	59.049	59.195
1498.2	5	59.091	59.185
1498.3	5	59.133	59.175

1498.4	5	59.154	59.165
1498.5	5	59.175	59.155
1498.6	5	59.217	59.145
1498.7	5	59.238	59.135
1498.8	5	59.258	59.125
1498.9	5	59.279	59.115
1499	5	59.3	59.105
1499.1	5	59.3	59.085
1499.2	5	59.3	59.055
1499.3	5	59.321	59.025
1499.4	5	59.321	58.995
1499.5	5	59.3	58.965
1499.6	5	59.3	58.935
1499.7	5	59.279	58.905
1499.8	5	59.279	58.875
1499.9	5	59.258	58.845
1500	5	59.238	58.815
1500.1	5	59.196	58.785
1500.2	5	59.175	58.755
1500.3	5	59.112	58.725
1500.4	5	59.049	58.695
1500.5	5	58.986	58.665
1500.6	5	58.923	58.635
1500.7	5	58.861	58.605
1500.8	5	58.777	58.575
1500.9	5	58.714	58.545
1501	5	58.651	58.515
1501.1	5	58.588	58.48
1501.2	5	58.546	58.44
1501.3	5	58.504	58.4
1501.4	5	58.463	58.36
1501.5	5	58.421	58.32
1501.6	5	58.4	58.28
1501.7	5	58.379	58.24
1501.8	5	58.358	58.2
1501.9	5	58.358	58.16
1502	5	58.337	58.12
1502.1	5	58.337	58.08
1502.2	5	58.337	58.04
1502.3	5	58.316	58
1502.4	5	58.316	57.96
1502.5	5	58.295	57.92
1502.6	5	58.295	57.88
1502.7	5	58.295	57.84
1502.8	5	58.295	57.8

1502.9	5	58.274	57.76
1503	5	58.253	57.72
1503.1	5	58.253	57.68
1503.2	5	58.253	57.64
1503.3	5	58.232	57.6
1503.4	5	58.211	57.56
1503.5	5	58.211	57.52
1503.6	5	58.19	57.48
1503.7	5	58.19	57.44
1503.8	5	58.169	57.4
1503.9	5	58.127	57.36
1504	5	58.106	57.32
1504.1	5	58.106	57.29
1504.2	5	58.085	57.27
1504.3	5	58.002	57.25
1504.4	5	57.939	57.23
1504.5	5	57.939	57.21
1504.6	5	57.876	57.19
1504.7	5	57.813	57.17
1504.8	5	57.687	57.15
1504.9	5	57.687	57.13
1505	5	57.625	57.11
1505.1	5	57.541	57.085
1505.2	5	57.415	57.055
1505.3	5	57.352	57.025
1505.4	5	57.352	56.995
1505.5	5	57.29	56.965
1505.6	5	57.227	56.935
1505.7	5	57.101	56.905
1505.8	5	57.101	56.875
1505.9	5	57.038	56.845
1506	5	56.954	56.815
1506.1	5	56.892	56.785
1506.2	5	56.829	56.755
1506.3	5	56.766	56.725
1506.4	5	56.724	56.695
1506.5	5	56.661	56.665
1506.6	5	56.556	56.635
1506.7	5	56.556	56.605
1506.8	5	56.514	56.575
1506.9	5	56.473	56.545
1507	5	56.431	56.515
1507.1	5	56.389	56.485
1507.2	5	56.347	56.455
1507.3	5	56.326	56.425

1507.4	5	56.284	56.395
1507.5	5	56.221	56.365
1507.6	5	56.158	56.335
1507.7	5	56.116	56.305
1507.8	5	56.033	56.275
1507.9	5	55.97	56.245
1508	5	55.907	56.215
1508.1	5	55.823	56.165
1508.2	5	55.76	56.095
1508.3	5	55.677	56.025
1508.4	5	55.614	55.955
1508.5	5	55.53	55.885
1508.6	5	55.467	55.815
1508.7	5	55.383	55.745
1508.8	5	55.32	55.675
1508.9	5	55.258	55.605
1509	5	55.174	55.535
1509.1	5	55.111	55.455
1509.2	5	55.048	55.365
1509.3	5	54.964	55.275
1509.4	5	54.902	55.185
1509.5	5	54.839	55.095
1509.6	5	54.776	55.005
1509.7	5	54.692	54.915
1509.8	5	54.629	54.825
1509.9	5	54.566	54.735
1510	5	54.504	54.645
1510.1	5	54.42	54.575
1510.2	5	54.357	54.525
1510.3	5	54.294	54.475
1510.4	5	54.231	54.425
1510.5	5	54.168	54.375
1510.6	5	54.127	54.325
1510.7	5	54.064	54.275
1510.8	5	54.022	54.225
1510.9	5	54.022	54.175
1511	5	53.938	54.125
1511.1	5	53.896	54.08
1511.2	5	53.854	54.04
1511.3	5	53.812	54
1511.4	5	53.791	53.96
1511.5	5	53.749	53.92
1511.6	5	53.708	53.88
1511.7	5	53.666	53.84
1511.8	5	53.624	53.8

1511.9	5	53.624	53.76
1512	5	53.54	53.72
1512.1	5	53.498	53.675
1512.2	5	53.456	53.625
1512.3	5	53.456	53.575
1512.4	5	53.372	53.525
1512.5	5	53.31	53.475
1512.6	5	53.289	53.425
1512.7	5	53.247	53.375
1512.8	5	53.247	53.325
1512.9	5	53.163	53.275
1513	5	53.121	53.225
1513.1	5	53.079	53.185
1513.2	5	53.079	53.155
1513.3	5	53.058	53.125
1513.4	5	52.974	53.095
1513.5	5	52.933	53.065
1513.6	5	52.933	53.035
1513.7	5	52.891	53.005
1513.8	5	52.828	52.975
1513.9	5	52.786	52.945
1514	5	52.744	52.915
1514.1	5	52.744	52.88
1514.2	5	52.681	52.84
1514.3	5	52.576	52.8
1514.4	5	52.514	52.76
1514.5	5	52.514	52.72
1514.6	5	52.451	52.68
1514.7	5	52.409	52.64
1514.8	5	52.283	52.598
1514.9	5	52.283	52.56
1515	5	52.199	52.52
1515.1	5	52.137	52.475
1515.2	5	51.99	52.425
1515.3	5	51.99	52.375
1515.4	5	51.927	52.325
1515.5	5	51.864	52.275
1515.6	5	51.78	52.225
1515.7	5	51.655	52.175
1515.8	5	51.655	52.125
1515.9	5	51.571	52.075
1516	5	51.508	52.025
1516.1	5	51.424	51.965
1516.2	5	51.362	51.895
1516.3	5	51.299	51.825

1516.4	5	51.215	51.755
1516.5	5	51.152	51.685
1516.6	5	51.068	51.615
1516.7	5	51.005	51.545
1516.8	5	50.943	51.475
1516.9	5	50.859	51.405
1517	5	50.796	51.335
1517.1	5	50.733	51.26
1517.2	5	50.67	51.18
1517.3	5	50.587	51.1
1517.4	5	50.524	51.02
1517.5	5	50.461	50.94
1517.6	5	50.398	50.86
1517.7	5	50.314	50.78
1517.8	5	50.251	50.7
1517.9	5	50.189	50.62
1518	5	50.126	50.54
1518.1	5	50.063	50.45
1518.2	5	49.979	50.35
1518.3	5	49.916	50.25
1518.4	5	49.853	50.15
1518.5	5	49.791	50.05
1518.6	5	49.728	49.95
1518.7	5	49.665	49.85
1518.8	5	49.602	49.75
1518.9	5	49.539	49.65
1519	5	49.476	49.55
1519.1	5	49.414	49.45
1519.2	5	49.351	49.35
1519.3	5	49.288	49.25
1519.4	5	49.225	49.15
1519.5	5	49.162	49.05
1519.6	5	49.099	48.95
1519.7	5	49.036	48.85
1519.8	5	48.974	48.75
1519.9	5	48.911	48.65
1520	5	48.848	48.55
1520.1	5	48.764	48.455
1520.2	5	48.701	48.365
1520.3	5	48.638	48.275
1520.4	5	48.576	48.185
1520.5	5	48.492	48.095
1520.6	5	48.429	48.005
1520.7	5	48.345	47.915
1520.8	5	48.261	47.825

1520.9	5	48.199	47.735
1521	5	48.115	47.645
1521.1	5	48.031	47.56
1521.2	5	47.947	47.48
1521.3	5	47.884	47.4
1521.4	5	47.884	47.32
1521.5	5	47.717	47.24
1521.6	5	47.654	47.16
1521.7	5	47.57	47.08
1521.8	5	47.57	47
1521.9	5	47.424	46.92
1522	5	47.34	46.84
1522.1	5	47.256	46.74
1522.2	5	47.193	46.62
1522.3	5	47.193	46.5
1522.4	5	47.026	46.38
1522.5	5	46.963	46.26
1522.6	5	46.879	46.14
1522.7	5	46.879	46.02
1522.8	5	46.816	45.9
1522.9	5	46.628	45.78
1523	5	46.523	45.66
1523.1	5	46.523	45.53
1523.2	5	46.418	45.39
1523.3	5	46.209	45.25
1523.4	5	46.083	45.11
1523.5	5	46.083	44.97
1523.6	5	45.936	44.83
1523.7	5	45.769	44.69
1523.8	5	45.413	44.55
1523.9	5	45.413	44.41
1524	5	45.413	44.27
1524.1	5	45.057	44.115
1524.2	5	44.868	43.945
1524.3	5	44.512	43.775
1524.4	5	44.512	43.605
1524.5	5	44.282	43.435
1524.6	5	44.03	43.265
1524.7	5	43.423	43.095
1524.8	5	43.423	42.925
1524.9	5	43.088	42.755
1525	5	42.711	42.585
1525.1	5	42.333	42.335
1525.2	5	41.579	42.005
1525.3	5	41.579	41.675



1525.4	5	41.202	41.345
1525.5	5	40.825	41.015
1525.6	5	40.448	40.685
1525.7	5	40.071	40.355
1525.8	5	39.694	40.025
1525.9	5	39.338	39.695
1526	5	39.045	39.365
1526.1	5	38.752	39.035
1526.2	5	38.458	38.705
1526.3	5	38.165	38.375
1526.4	5	37.872	38.045
1526.5	5	37.579	37.715
1526.6	5	37.306	37.385
1526.7	5	36.992	37.055
1526.8	5	36.636	36.725
1526.9	5	36.28	36.395
1527	5	35.924	36.065
1527.1	5	35.547	35.735
1527.2	5	35.191	35.405
1527.3	5	34.835	35.075
1527.4	5	34.541	34.745
1527.5	5	34.269	34.415
1527.6	5	34.018	34.085
1527.7	5	33.766	33.755
1527.8	5	33.515	33.425
1527.9	5	33.264	33.095
1528	5	32.991	32.765
1528.1	5	32.74	32.435
1528.2	5	32.468	32.105
1528.3	5	32.195	31.775
1528.4	5	31.902	31.445
1528.5	5	31.588	31.115
1528.6	5	31.232	30.785
1528.7	5	30.876	30.455
1528.8	5	30.499	30.125
1528.9	5	30.163	29.795
1529	5	29.849	29.465
1529.1	5	29.556	29.175
1529.2	5	29.284	28.925
1529.3	5	28.99	28.675
1529.4	5	28.718	28.425
1529.5	5	28.425	28.175
1529.6	5	28.111	27.925
1529.7	5	27.817	27.675
1529.8	5	27.503	27.425

1529.9	5	27.21	27.175
1530	5	26.917	26.925
1530.1	5	26.665	26.685
1530.2	5	26.435	26.455
1530.3	5	26.204	26.225
1530.4	5	25.995	25.995
1530.5	5	25.765	25.765
1530.6	5	25.534	25.535
1530.7	5	25.304	25.305
1530.8	5	25.073	25.075
1530.9	5	24.822	24.845
1531	5	24.822	24.615
1531.1	5	24.361	24.35
1531.2	5	24.11	24.05
1531.3	5	23.879	23.75
1531.4	5	23.649	23.45
1531.5	5	23.649	23.15
1531.6	5	23.209	22.85
1531.7	5	22.979	22.55
1531.8	5	22.727	22.25
1531.9	5	22.727	21.95
1532	5	22.497	21.65
1532.1	5	22.015	21.4
1532.2	5	21.785	21.2
1532.3	5	21.575	21
1532.4	5	21.575	20.8
1532.5	5	21.324	20.6
1532.6	5	20.842	20.4
1532.7	5	20.633	20.2
1532.8	5	20.633	20
1532.9	5	20.423	19.8
1533	5	20.004	19.6
1533.1	5	19.816	19.395
1533.2	5	19.816	19.185
1533.3	5	19.606	18.975
1533.4	5	19.418	18.765
1533.5	5	19.041	18.555
1533.6	5	18.852	18.345
1533.7	5	18.852	18.135
1533.8	5	18.643	17.925
1533.9	5	18.454	17.715
1534	5	18.056	17.505
1534.1	5	18.056	17.285
1534.2	5	17.868	17.055
1534.3	5	17.679	16.825

1534.4	5	17.512	16.595
1534.5	5	17.155	16.365
1534.6	5	17.155	16.135
1534.7	5	16.967	15.905
1534.8	5	16.82	15.675
1534.9	5	16.653	15.445
1535	5	16.485	15.215
1535.1	5	16.318	14.965
1535.2	5	16.15	14.695
1535.3	5	15.982	14.425
1535.4	5	15.836	14.155
1535.5	5	15.668	13.885
1535.6	5	15.48	13.615
1535.7	5	15.27	13.345
1535.8	5	15.019	13.075
1535.9	5	14.663	12.805
1536	5	14.202	12.535
1536.1	5	13.636	12.265
1536.2	5	13.008	11.995
1536.3	5	12.38	11.725
1536.4	5	11.73	11.455
1536.5	5	11.102	11.185
1536.6	5	10.452	10.915
1536.7	5	9.95	10.645
1536.8	5	9.573	10.375
1536.9	5	9.573	10.105
1537	5	8.965	9.835
1537.1	5	8.714	9.565
1537.2	5	8.504	9.295
1537.3	5	8.337	9.025
1537.4	5	8.19	8.755
1537.5	5	8.044	8.485
1537.6	5	7.897	8.215
1537.7	5	7.75	7.945
1537.8	5	7.604	7.675
1537.9	5	7.457	7.405
1538	5	7.31	7.135
1538.1	5	7.164	6.9
1538.2	5	7.017	6.7
1538.3	5	6.871	6.5
1538.4	5	6.724	6.3
1538.5	5	6.577	6.1
1538.6	5	6.431	5.9
1538.7	5	6.284	5.7
1538.8	5	6.116	5.5

1538.9	5	5.97	5.3
1539	5	5.823	5.1
1539.1	5	5.677	4.915
1539.2	5	5.53	4.745
1539.3	5	5.383	4.575
1539.4	5	5.216	4.405
1539.5	5	5.048	4.235
1539.6	5	4.881	4.065
1539.7	5	4.734	3.895
1539.8	5	4.525	3.725
1539.9	5	4.21	3.555
1540	5	3.875	3.385
1540.1	5	3.519	3.235
1540.2	5	3.163	3.105
1540.3	5	2.828	2.975
1540.4	5	2.576	2.845
1540.5	5	2.346	2.715
1540.6	5	2.346	2.585
1540.7	5	1.906	2.455
1540.8	5	1.718	2.325
1540.9	5	1.508	2.195
1541	5	1.299	2.065
1541.1	5	1.299	1.935
1541.2	5	0.922	1.805
1541.3	5	0.733	1.675
1541.4	5	0.566	1.545
1541.5	5	0.566	1.415
1541.6	5	0.377	1.285
1541.7	5	0.126	1.155
1541.8	5	0.126	1.025
1541.9	5	0.126	0.895
1542	5	0.126	0.765
1542.1	5	0.063	0.665
1542.2	5	0.084	0.595
1542.3	5	0.042	0.525
1542.4	5	0.042	0.455
1542.5	5	0.042	0.385
1542.6	5	0.042	0.315
1542.7	5	0.021	0.245
1542.8	5	0.021	0.175
1542.9	5	0.021	0.105
1543	5	0.021	0.035
1543.1	5	0	0
1543.2	5	0	0
1543.3	5	0	0

1543.4	5	0	0
1543.5	5	0	0
1543.6	5	0	0
1543.7	5	0	0
1543.8	5	0	0
1543.9	5	0	0
1544	5	0	0
1544.1	0	0	0
1544.2	0	0	0
1544.3	0	0	0
1544.4	0	0	0
1544.5	0	0	0
1544.6	0	0	0
1544.7	0	0	0
1544.8	0	0	0
1544.9	0	0	0
1545	0	0	0

Test Facility	EPA_NVFEL	Time	Cycle ID	VROLL_i	VSCHED_i
Manufacturer	see test report		0	1	-0.021
Model	-		0.1	1	-0.021
Vehicle ID	FAPA-AAF		0.2	1	-0.021
Veh Config	1		0.3	1	-0.021
Test Date	41668		0.4	1	-0.021
Test Type	FTP		0.5	1	-0.021
Test ID	140038004		0.6	1	-0.021
ETW (lbs)	3500		0.7	1	-0.021
F0 (lbf)	35.97		0.8	1	-0.021
F1 (lbf/mph)	0.1447		0.9	1	-0.021
F2 (lbf/mph)	0.01612		1	1	-0.021
Speed Units	mph		1.1	1	-0.021
Regen Brake	N		1.2	1	-0.021
Dyno ID	D002		1.3	1	-0.021
			1.4	1	-0.021
			1.5	1	-0.021
			1.6	1	-0.021
			1.7	1	-0.021
			1.8	1	-0.021
			1.9	1	-0.021
			2	1	-0.021
			2.1	1	-0.021
			2.2	1	-0.021
			2.3	1	-0.021
			2.4	1	-0.021
			2.5	1	-0.021
			2.6	1	-0.021
			2.7	1	-0.021
			2.8	1	-0.021
			2.9	1	-0.021
			3	1	-0.021
			3.1	1	-0.021
			3.2	1	-0.021
			3.3	1	-0.021
			3.4	1	-0.021
			3.5	1	-0.021
			3.6	1	-0.021
			3.7	1	-0.021
			3.8	1	-0.021
			3.9	1	-0.021
			4	1	-0.021
			4.1	1	-0.021
			4.2	1	-0.021
			4.3	1	-0.021

4.4	1	-0.021	0
4.5	1	-0.021	0
4.6	1	-0.021	0
4.7	1	-0.021	0
4.8	1	-0.021	0
4.9	1	-0.021	0
5	1	-0.021	0
5.1	1	-0.021	0
5.2	1	-0.021	0
5.3	1	-0.021	0
5.4	1	-0.021	0
5.5	1	-0.021	0
5.6	1	-0.021	0
5.7	1	-0.021	0
5.8	1	-0.021	0
5.9	1	-0.021	0
6	1	-0.021	0
6.1	1	-0.021	0
6.2	1	-0.021	0
6.3	1	-0.021	0
6.4	1	-0.021	0
6.5	1	-0.021	0
6.6	1	-0.021	0
6.7	1	-0.021	0
6.8	1	-0.021	0
6.9	1	-0.021	0
7	1	-0.021	0
7.1	1	-0.021	0
7.2	1	-0.021	0
7.3	1	-0.021	0
7.4	1	-0.021	0
7.5	1	-0.021	0
7.6	1	-0.021	0
7.7	1	-0.021	0
7.8	1	-0.021	0
7.9	1	-0.021	0
8	1	-0.021	0
8.1	1	-0.021	0
8.2	1	-0.021	0
8.3	1	-0.021	0
8.4	1	-0.021	0
8.5	1	-0.021	0
8.6	1	-0.021	0
8.7	1	-0.021	0
8.8	1	-0.021	0

8.9	1	-0.021	0
9	1	-0.021	0
9.1	1	-0.021	0
9.2	1	-0.021	0
9.3	1	-0.021	0
9.4	1	-0.021	0
9.5	1	-0.021	0
9.6	1	-0.021	0
9.7	1	0	0
9.8	1	-0.021	0
9.9	1	-0.021	0
10	1	-0.021	0
10.1	1	0	0
10.2	1	-0.021	0
10.3	1	-0.021	0
10.4	1	-0.021	0
10.5	1	-0.021	0
10.6	1	-0.021	0
10.7	1	-0.021	0
10.8	1	-0.021	0
10.9	1	0	0
11	1	-0.021	0
11.1	1	-0.021	0
11.2	1	-0.021	0
11.3	1	-0.021	0
11.4	1	-0.021	0
11.5	1	-0.021	0
11.6	1	-0.021	0
11.7	1	-0.021	0
11.8	1	-0.021	0
11.9	1	-0.021	0
12	1	-0.021	0
12.1	1	-0.021	0
12.2	1	-0.021	0
12.3	1	-0.021	0
12.4	1	-0.021	0
12.5	1	0	0
12.6	1	-0.021	0
12.7	1	-0.021	0
12.8	1	-0.021	0
12.9	1	-0.021	0
13	1	-0.021	0
13.1	1	-0.021	0
13.2	1	-0.021	0
13.3	1	-0.021	0



13.4	1	-0.021	0
13.5	1	-0.021	0
13.6	1	-0.021	0
13.7	1	-0.021	0
13.8	1	-0.021	0
13.9	1	-0.021	0
14	1	-0.021	0
14.1	1	-0.021	0
14.2	1	-0.021	0
14.3	1	-0.021	0
14.4	1	-0.021	0
14.5	1	-0.021	0
14.6	1	-0.021	0
14.7	1	-0.021	0
14.8	1	-0.021	0
14.9	1	-0.021	0
15	1	-0.021	0
15.1	1	-0.021	0
15.2	1	-0.021	0
15.3	1	-0.021	0
15.4	1	-0.021	0
15.5	1	-0.021	0
15.6	1	-0.021	0
15.7	1	-0.021	0
15.8	1	-0.021	0
15.9	1	-0.021	0
16	1	-0.021	0
16.1	1	-0.021	0
16.2	1	0	0
16.3	1	0	0
16.4	1	-0.021	0
16.5	1	-0.021	0
16.6	1	-0.021	0
16.7	1	-0.021	0
16.8	1	-0.021	0
16.9	1	-0.021	0
17	1	-0.021	0
17.1	1	-0.021	0
17.2	1	-0.021	0
17.3	1	-0.021	0
17.4	1	-0.021	0
17.5	1	-0.021	0
17.6	1	-0.021	0
17.7	1	-0.021	0
17.8	1	-0.021	0

17.9	1	-0.021	0
18	1	0	0
18.1	1	-0.021	0
18.2	1	-0.021	0
18.3	1	-0.021	0
18.4	1	-0.021	0
18.5	1	-0.021	0
18.6	1	-0.021	0
18.7	1	-0.021	0
18.8	1	-0.021	0
18.9	1	-0.021	0
19	1	-0.021	0
19.1	1	-0.021	0
19.2	1	0	0
19.3	1	0.021	0
19.4	1	0.042	0
19.5	1	0.084	0
19.6	1	0.105	0
19.7	1	0.147	0
19.8	1	0.189	0
19.9	1	0.23	0
20	1	0.272	0
20.1	1	0.314	0.15
20.2	1	0.377	0.45
20.3	1	0.44	0.75
20.4	1	0.524	1.05
20.5	1	0.67	1.35
20.6	1	1.005	1.65
20.7	1	1.403	1.95
20.8	1	1.739	2.25
20.9	1	2.032	2.55
21	1	2.304	2.85
21.1	1	2.556	3.145
21.2	1	2.786	3.435
21.3	1	3.016	3.725
21.4	1	3.289	4.015
21.5	1	3.624	4.305
21.6	1	4.022	4.595
21.7	1	4.462	4.885
21.8	1	4.943	5.175
21.9	1	5.446	5.465
22	1	5.446	5.755
22.1	1	6.452	6.035
22.2	1	6.933	6.305
22.3	1	7.394	6.575

22.4	1	7.771	6.845
22.5	1	8.085	7.115
22.6	1	8.337	7.385
22.7	1	8.567	7.655
22.8	1	8.798	7.925
22.9	1	8.798	8.195
23	1	9.279	8.465
23.1	1	9.531	8.745
23.2	1	9.761	9.035
23.3	1	9.761	9.325
23.4	1	9.929	9.615
23.5	1	10.264	9.905
23.6	1	10.432	10.195
23.7	1	10.578	10.485
23.8	1	10.578	10.775
23.9	1	10.767	11.065
24	1	11.144	11.355
24.1	1	11.374	11.64
24.2	1	11.374	11.92
24.3	1	11.605	12.2
24.4	1	12.149	12.48
24.5	1	12.463	12.76
24.6	1	12.463	13.04
24.7	1	12.798	13.32
24.8	1	13.092	13.6
24.9	1	13.657	13.88
25	1	13.657	14.16
25.1	1	13.951	14.43
25.2	1	14.223	14.69
25.3	1	14.516	14.95
25.4	1	15.124	15.21
25.5	1	15.124	15.47
25.6	1	15.417	15.73
25.7	1	15.668	15.99
25.8	1	16.003	16.25
25.9	1	16.003	16.51
26	1	16.087	16.77
26.1	1	16.192	16.92
26.2	1	16.318	16.96
26.3	1	16.443	17
26.4	1	16.569	17.04
26.5	1	16.716	17.08
26.6	1	16.841	17.12
26.7	1	16.946	17.16
26.8	1	17.051	17.2

26.9	1	17.134	17.24
27	1	17.239	17.28
27.1	1	17.302	17.34
27.2	1	17.365	17.42
27.3	1	17.428	17.5
27.4	1	17.532	17.58
27.5	1	17.637	17.66
27.6	1	17.826	17.74
27.7	1	18.035	17.82
27.8	1	18.266	17.9
27.9	1	18.517	17.98
28	1	18.768	18.06
28.1	1	18.999	18.23
28.2	1	19.271	18.49
28.3	1	19.522	18.75
28.4	1	19.774	19.01
28.5	1	20.046	19.27
28.6	1	20.297	19.53
28.7	1	20.57	19.79
28.8	1	20.821	20.05
28.9	1	21.072	20.31
29	1	21.303	20.57
29.1	1	21.47	20.75
29.2	1	21.617	20.85
29.3	1	21.764	20.95
29.4	1	21.889	21.05
29.5	1	21.994	21.15
29.6	1	22.099	21.25
29.7	1	22.183	21.35
29.8	1	22.246	21.45
29.9	1	22.287	21.55
30	1	22.308	21.65
30.1	1	22.308	21.735
30.2	1	22.308	21.805
30.3	1	22.287	21.875
30.4	1	22.287	21.945
30.5	1	22.287	22.015
30.6	1	22.308	22.085
30.7	1	22.329	22.155
30.8	1	22.329	22.225
30.9	1	22.329	22.295
31	1	22.308	22.365
31.1	1	22.287	22.405
31.2	1	22.246	22.415
31.3	1	22.246	22.425

31.4	1	22.183	22.435
31.5	1	22.183	22.445
31.6	1	22.099	22.455
31.7	1	22.036	22.465
31.8	1	21.994	22.475
31.9	1	21.931	22.485
32	1	21.848	22.495
32.1	1	21.764	22.48
32.2	1	21.68	22.44
32.3	1	21.617	22.4
32.4	1	21.617	22.36
32.5	1	21.533	22.32
32.6	1	21.533	22.28
32.7	1	21.575	22.24
32.8	1	21.575	22.2
32.9	1	21.638	22.16
33	1	21.764	22.12
33.1	1	21.848	22.07
33.2	1	21.848	22.01
33.3	1	21.931	21.95
33.4	1	22.057	21.89
33.5	1	22.078	21.83
33.6	1	22.099	21.77
33.7	1	22.099	21.71
33.8	1	22.12	21.65
33.9	1	22.078	21.59
34	1	22.057	21.53
34.1	1	22.057	21.47
34.2	1	22.015	21.41
34.3	1	21.973	21.35
34.4	1	21.868	21.29
34.5	1	21.806	21.23
34.6	1	21.806	21.17
34.7	1	21.722	21.11
34.8	1	21.617	21.05
34.9	1	21.387	20.99
35	1	21.387	20.93
35.1	1	21.282	20.875
35.2	1	21.177	20.825
35.3	1	21.072	20.775
35.4	1	20.968	20.725
35.5	1	20.863	20.675
35.6	1	20.758	20.625
35.7	1	20.674	20.575
35.8	1	20.486	20.525

35.9	1	20.486	20.475
36	1	20.402	20.425
36.1	1	20.318	20.37
36.2	1	20.235	20.31
36.3	1	20.151	20.25
36.4	1	20.067	20.19
36.5	1	19.983	20.13
36.6	1	19.879	20.07
36.7	1	19.69	20.01
36.8	1	19.418	19.95
36.9	1	19.103	19.89
37	1	18.747	19.83
37.1	1	18.412	19.66
37.2	1	18.077	19.38
37.3	1	17.763	19.1
37.4	1	17.47	18.82
37.5	1	17.176	18.54
37.6	1	16.862	18.26
37.7	1	16.611	17.98
37.8	1	16.464	17.7
37.9	1	16.339	17.42
38	1	16.255	17.14
38.1	1	16.171	16.895
38.2	1	16.087	16.685
38.3	1	16.003	16.475
38.4	1	15.92	16.265
38.5	1	15.836	16.055
38.6	1	15.752	15.845
38.7	1	15.668	15.635
38.8	1	15.584	15.425
38.9	1	15.522	15.215
39	1	15.438	15.005
39.1	1	15.375	14.9
39.2	1	15.291	14.9
39.3	1	15.207	14.9
39.4	1	15.124	14.9
39.5	1	15.04	14.9
39.6	1	14.956	14.9
39.7	1	14.872	14.9
39.8	1	14.788	14.9
39.9	1	14.705	14.9
40	1	14.642	14.9
40.1	1	14.558	14.915
40.2	1	14.495	14.945
40.3	1	14.411	14.975

40.4	1	14.328	15.005
40.5	1	14.286	15.035
40.6	1	14.286	15.065
40.7	1	14.202	15.095
40.8	1	14.16	15.125
40.9	1	14.16	15.155
41	1	14.181	15.185
41.1	1	14.181	15.215
41.2	1	14.286	15.245
41.3	1	14.411	15.275
41.4	1	14.579	15.305
41.5	1	14.579	15.335
41.6	1	14.83	15.365
41.7	1	14.914	15.395
41.8	1	14.956	15.425
41.9	1	14.998	15.455
42	1	14.998	15.485
42.1	1	15.082	15.525
42.2	1	15.145	15.575
42.3	1	15.249	15.625
42.4	1	15.249	15.675
42.5	1	15.375	15.725
42.6	1	15.626	15.775
42.7	1	15.752	15.825
42.8	1	15.752	15.875
42.9	1	15.878	15.925
43	1	16.066	15.975
43.1	1	16.15	16.055
43.2	1	16.15	16.165
43.3	1	16.255	16.275
43.4	1	16.359	16.385
43.5	1	16.653	16.495
43.6	1	16.778	16.605
43.7	1	16.778	16.715
43.8	1	16.904	16.825
43.9	1	17.009	16.935
44	1	17.239	17.045
44.1	1	17.239	17.2
44.2	1	17.344	17.4
44.3	1	17.47	17.6
44.4	1	17.658	17.8
44.5	1	17.658	18
44.6	1	17.784	18.2
44.7	1	17.889	18.4
44.8	1	18.035	18.6

44.9	1	18.433	18.8
45	1	18.433	19
45.1	1	18.664	19.2
45.2	1	18.894	19.4
45.3	1	19.376	19.6
45.4	1	19.376	19.8
45.5	1	19.627	20
45.6	1	19.879	20.2
45.7	1	20.151	20.4
45.8	1	20.402	20.6
45.9	1	20.654	20.8
46	1	20.884	21
46.1	1	21.093	21.18
46.2	1	21.261	21.34
46.3	1	21.429	21.5
46.4	1	21.617	21.66
46.5	1	21.785	21.82
46.6	1	21.952	21.98
46.7	1	22.078	22.14
46.8	1	22.183	22.3
46.9	1	22.266	22.46
47	1	22.308	22.62
47.1	1	22.371	22.71
47.2	1	22.392	22.73
47.3	1	22.434	22.75
47.4	1	22.476	22.77
47.5	1	22.497	22.79
47.6	1	22.497	22.81
47.7	1	22.476	22.83
47.8	1	22.455	22.85
47.9	1	22.434	22.87
48	1	22.392	22.89
48.1	1	22.35	22.89
48.2	1	22.35	22.87
48.3	1	22.392	22.85
48.4	1	22.434	22.83
48.5	1	22.497	22.81
48.6	1	22.581	22.79
48.7	1	22.643	22.77
48.8	1	22.685	22.75
48.9	1	22.706	22.73
49	1	22.727	22.71
49.1	1	22.706	22.695
49.2	1	22.706	22.685
49.3	1	22.664	22.675



49.4	1	22.643	22.665
49.5	1	22.602	22.655
49.6	1	22.539	22.645
49.7	1	22.497	22.635
49.8	1	22.413	22.625
49.9	1	22.35	22.615
50	1	22.246	22.605
50.1	1	22.162	22.535
50.2	1	22.036	22.405
50.3	1	21.91	22.275
50.4	1	21.785	22.145
50.5	1	21.785	22.015
50.6	1	21.408	21.885
50.7	1	21.198	21.755
50.8	1	20.968	21.625
50.9	1	20.758	21.495
51	1	20.758	21.365
51.1	1	20.339	21.185
51.2	1	20.109	20.955
51.3	1	19.837	20.725
51.4	1	19.837	20.495
51.5	1	19.229	20.265
51.6	1	18.915	20.035
51.7	1	18.622	19.805
51.8	1	18.622	19.575
51.9	1	18.37	19.345
52	1	17.847	19.115
52.1	1	17.637	18.905
52.2	1	17.428	18.715
52.3	1	17.428	18.525
52.4	1	17.26	18.335
52.5	1	17.009	18.145
52.6	1	16.883	17.955
52.7	1	16.883	17.765
52.8	1	16.778	17.575
52.9	1	16.548	17.385
53	1	16.443	17.195
53.1	1	16.443	17.035
53.2	1	16.339	16.905
53.3	1	16.255	16.775
53.4	1	16.108	16.645
53.5	1	16.024	16.515
53.6	1	16.024	16.385
53.7	1	15.941	16.255
53.8	1	15.878	16.125

53.9	1	15.731	15.995
54	1	15.731	15.865
54.1	1	15.689	15.8
54.2	1	15.668	15.8
54.3	1	15.668	15.8
54.4	1	15.752	15.8
54.5	1	15.752	15.8
54.6	1	15.815	15.8
54.7	1	15.878	15.8
54.8	1	15.961	15.8
54.9	1	16.066	15.8
55	1	16.15	15.8
55.1	1	16.255	15.895
55.2	1	16.38	16.085
55.3	1	16.506	16.275
55.4	1	16.653	16.465
55.5	1	16.799	16.655
55.6	1	16.946	16.845
55.7	1	17.093	17.035
55.8	1	17.26	17.225
55.9	1	17.407	17.415
56	1	17.595	17.605
56.1	1	17.784	17.805
56.2	1	17.993	18.015
56.3	1	18.203	18.225
56.4	1	18.412	18.435
56.5	1	18.601	18.645
56.6	1	18.789	18.855
56.7	1	18.978	19.065
56.8	1	19.166	19.275
56.9	1	19.376	19.485
57	1	19.585	19.695
57.1	1	19.816	19.89
57.2	1	20.046	20.07
57.3	1	20.046	20.25
57.4	1	20.528	20.43
57.5	1	20.779	20.61
57.6	1	21.01	20.79
57.7	1	21.198	20.97
57.8	1	21.387	21.15
57.9	1	21.554	21.33
58	1	21.722	21.51
58.1	1	21.868	21.68
58.2	1	22.036	21.84
58.3	1	22.225	22

58.4	1	22.392	22.16
58.5	1	22.539	22.32
58.6	1	22.706	22.48
58.7	1	22.853	22.64
58.8	1	23	22.8
58.9	1	23.146	22.96
59	1	23.251	23.12
59.1	1	23.356	23.25
59.2	1	23.46	23.35
59.3	1	23.565	23.45
59.4	1	23.67	23.55
59.5	1	23.733	23.65
59.6	1	23.775	23.75
59.7	1	23.775	23.85
59.8	1	23.817	23.95
59.9	1	23.837	24.05
60	1	23.879	24.15
60.1	1	23.921	24.22
60.2	1	23.921	24.26
60.3	1	24.047	24.3
60.4	1	24.11	24.34
60.5	1	24.194	24.38
60.6	1	24.194	24.42
60.7	1	24.319	24.46
60.8	1	24.403	24.5
60.9	1	24.487	24.54
61	1	24.592	24.58
61.1	1	24.592	24.615
61.2	1	24.717	24.645
61.3	1	24.759	24.675
61.4	1	24.801	24.705
61.5	1	24.801	24.735
61.6	1	24.843	24.765
61.7	1	24.906	24.795
61.8	1	24.927	24.825
61.9	1	24.927	24.855
62	1	24.927	24.885
62.1	1	24.906	24.905
62.2	1	24.885	24.915
62.3	1	24.885	24.925
62.4	1	24.864	24.935
62.5	1	24.843	24.945
62.6	1	24.801	24.955
62.7	1	24.78	24.965
62.8	1	24.78	24.975

62.9	1	24.759	24.985
63	1	24.738	24.995
63.1	1	24.717	24.98
63.2	1	24.696	24.94
63.3	1	24.696	24.9
63.4	1	24.675	24.86
63.5	1	24.675	24.82
63.6	1	24.675	24.78
63.7	1	24.675	24.74
63.8	1	24.675	24.7
63.9	1	24.696	24.66
64	1	24.696	24.62
64.1	1	24.696	24.595
64.2	1	24.696	24.585
64.3	1	24.717	24.575
64.4	1	24.738	24.565
64.5	1	24.78	24.555
64.6	1	24.801	24.545
64.7	1	24.843	24.535
64.8	1	24.885	24.525
64.9	1	24.906	24.515
65	1	24.948	24.505
65.1	1	24.948	24.51
65.2	1	24.948	24.53
65.3	1	24.948	24.55
65.4	1	24.948	24.57
65.5	1	24.948	24.59
65.6	1	24.948	24.61
65.7	1	24.948	24.63
65.8	1	24.927	24.65
65.9	1	24.927	24.67
66	1	24.906	24.69
66.1	1	24.885	24.705
66.2	1	24.864	24.715
66.3	1	24.843	24.725
66.4	1	24.843	24.735
66.5	1	24.822	24.745
66.6	1	24.822	24.755
66.7	1	24.822	24.765
66.8	1	24.822	24.775
66.9	1	24.822	24.785
67	1	24.801	24.795
67.1	1	24.801	24.795
67.2	1	24.801	24.785
67.3	1	24.801	24.775

67.4	1	24.801	24.765
67.5	1	24.801	24.755
67.6	1	24.78	24.745
67.7	1	24.78	24.735
67.8	1	24.78	24.725
67.9	1	24.759	24.715
68	1	24.738	24.705
68.1	1	24.717	24.695
68.2	1	24.696	24.685
68.3	1	24.675	24.675
68.4	1	24.633	24.665
68.5	1	24.612	24.655
68.6	1	24.612	24.645
68.7	1	24.612	24.635
68.8	1	24.612	24.625
68.9	1	24.612	24.615
69	1	24.633	24.605
69.1	1	24.654	24.6
69.2	1	24.654	24.6
69.3	1	24.675	24.6
69.4	1	24.675	24.6
69.5	1	24.696	24.6
69.6	1	24.717	24.6
69.7	1	24.738	24.6
69.8	1	24.738	24.6
69.9	1	24.801	24.6
70	1	24.822	24.6
70.1	1	24.864	24.625
70.2	1	24.906	24.675
70.3	1	24.906	24.725
70.4	1	25.01	24.775
70.5	1	25.052	24.825
70.6	1	25.115	24.875
70.7	1	25.115	24.925
70.8	1	25.178	24.975
70.9	1	25.283	25.025
71	1	25.346	25.075
71.1	1	25.346	25.125
71.2	1	25.388	25.175
71.3	1	25.45	25.225
71.4	1	25.513	25.275
71.5	1	25.534	25.325
71.6	1	25.534	25.375
71.7	1	25.534	25.425
71.8	1	25.555	25.475

71.9	1	25.576	25.525
72	1	25.576	25.575
72.1	1	25.597	25.605
72.2	1	25.597	25.615
72.3	1	25.618	25.625
72.4	1	25.618	25.635
72.5	1	25.618	25.645
72.6	1	25.618	25.655
72.7	1	25.597	25.665
72.8	1	25.576	25.675
72.9	1	25.576	25.685
73	1	25.555	25.695
73.1	1	25.513	25.685
73.2	1	25.492	25.655
73.3	1	25.45	25.625
73.4	1	25.45	25.595
73.5	1	25.429	25.565
73.6	1	25.408	25.535
73.7	1	25.388	25.505
73.8	1	25.367	25.475
73.9	1	25.346	25.445
74	1	25.346	25.415
74.1	1	25.325	25.375
74.2	1	25.304	25.325
74.3	1	25.304	25.275
74.4	1	25.283	25.225
74.5	1	25.283	25.175
74.6	1	25.283	25.125
74.7	1	25.283	25.075
74.8	1	25.283	25.025
74.9	1	25.304	24.975
75	1	25.304	24.925
75.1	1	25.304	24.905
75.2	1	25.304	24.915
75.3	1	25.304	24.925
75.4	1	25.325	24.935
75.5	1	25.346	24.945
75.6	1	25.367	24.955
75.7	1	25.429	24.965
75.8	1	25.471	24.975
75.9	1	25.513	24.985
76	1	25.576	24.995
76.1	1	25.639	25.02
76.2	1	25.681	25.06
76.3	1	25.723	25.1

76.4	1	25.786	25.14
76.5	1	25.827	25.18
76.6	1	25.89	25.22
76.7	1	25.932	25.26
76.8	1	25.974	25.3
76.9	1	26.016	25.34
77	1	26.037	25.38
77.1	1	26.058	25.43
77.2	1	26.079	25.49
77.3	1	26.079	25.55
77.4	1	26.1	25.61
77.5	1	26.1	25.67
77.6	1	26.121	25.73
77.7	1	26.142	25.79
77.8	1	26.142	25.85
77.9	1	26.163	25.91
78	1	26.163	25.97
78.1	1	26.184	26
78.2	1	26.184	26
78.3	1	26.204	26
78.4	1	26.184	26
78.5	1	26.184	26
78.6	1	26.163	26
78.7	1	26.163	26
78.8	1	26.163	26
78.9	1	26.142	26
79	1	26.142	26
79.1	1	26.142	25.985
79.2	1	26.121	25.955
79.3	1	26.121	25.925
79.4	1	26.121	25.895
79.5	1	26.142	25.865
79.6	1	26.184	25.835
79.7	1	26.225	25.805
79.8	1	26.225	25.775
79.9	1	26.246	25.745
80	1	26.33	25.715
80.1	1	26.372	25.72
80.2	1	26.414	25.76
80.3	1	26.414	25.8
80.4	1	26.519	25.84
80.5	1	26.561	25.88
80.6	1	26.623	25.92
80.7	1	26.623	25.96
80.8	1	26.665	26

80.9	1	26.791	26.04
81	1	26.833	26.08
81.1	1	26.833	26.13
81.2	1	26.875	26.19
81.3	1	26.917	26.25
81.4	1	26.979	26.31
81.5	1	26.979	26.37
81.6	1	26.979	26.43
81.7	1	27	26.49
81.8	1	27.021	26.55
81.9	1	27.084	26.61
82	1	27.084	26.67
82.1	1	27.105	26.74
82.2	1	27.147	26.82
82.3	1	27.252	26.9
82.4	1	27.252	26.98
82.5	1	27.294	27.06
82.6	1	27.357	27.14
82.7	1	27.419	27.22
82.8	1	27.524	27.3
82.9	1	27.524	27.38
83	1	27.608	27.46
83.1	1	27.671	27.555
83.2	1	27.775	27.665
83.3	1	27.775	27.775
83.4	1	27.943	27.885
83.5	1	28.048	27.995
83.6	1	28.153	28.105
83.7	1	28.257	28.215
83.8	1	28.362	28.325
83.9	1	28.467	28.435
84	1	28.571	28.545
84.1	1	28.697	28.635
84.2	1	28.802	28.705
84.3	1	28.928	28.775
84.4	1	29.053	28.849
84.5	1	29.179	28.915
84.6	1	29.284	28.985
84.7	1	29.388	29.055
84.8	1	29.472	29.125
84.9	1	29.514	29.195
85	1	29.556	29.265
85.1	1	29.598	29.325
85.2	1	29.619	29.375
85.3	1	29.661	29.425



85.4	1	29.682	29.475
85.5	1	29.703	29.525
85.6	1	29.744	29.575
85.7	1	29.765	29.625
85.8	1	29.786	29.675
85.9	1	29.807	29.725
86	1	29.828	29.775
86.1	1	29.849	29.815
86.2	1	29.87	29.845
86.3	1	29.891	29.875
86.4	1	29.933	29.905
86.5	1	29.954	29.935
86.6	1	30.017	29.965
86.7	1	30.059	29.995
86.8	1	30.101	30.025
86.9	1	30.142	30.055
87	1	30.184	30.085
87.1	1	30.205	30.115
87.2	1	30.247	30.145
87.3	1	30.289	30.175
87.4	1	30.331	30.205
87.5	1	30.352	30.235
87.6	1	30.373	30.265
87.7	1	30.394	30.295
87.8	1	30.394	30.325
87.9	1	30.394	30.355
88	1	30.394	30.385
88.1	1	30.394	30.415
88.2	1	30.373	30.445
88.3	1	30.352	30.475
88.4	1	30.331	30.505
88.5	1	30.331	30.535
88.6	1	30.331	30.565
88.7	1	30.331	30.595
88.8	1	30.331	30.625
88.9	1	30.331	30.655
89	1	30.331	30.685
89.1	1	30.31	30.7
89.2	1	30.31	30.7
89.3	1	30.31	30.7
89.4	1	30.31	30.7
89.5	1	30.394	30.7
89.6	1	30.478	30.7
89.7	1	30.582	30.7
89.8	1	30.582	30.7

89.9	1	30.666	30.7
90	1	30.834	30.7
90.1	1	30.876	30.69
90.2	1	30.938	30.67
90.3	1	30.938	30.65
90.4	1	30.98	30.63
90.5	1	31.064	30.61
90.6	1	31.085	30.59
90.7	1	31.085	30.57
90.8	1	31.064	30.55
90.9	1	31.043	30.53
91	1	30.938	30.51
91.1	1	30.938	30.495
91.2	1	30.876	30.485
91.3	1	30.813	30.475
91.4	1	30.666	30.465
91.5	1	30.666	30.455
91.6	1	30.582	30.445
91.7	1	30.478	30.435
91.8	1	30.394	30.425
91.9	1	30.247	30.415
92	1	30.247	30.405
92.1	1	30.226	30.395
92.2	1	30.205	30.385
92.3	1	30.184	30.375
92.4	1	30.184	30.365
92.5	1	30.184	30.355
92.6	1	30.205	30.345
92.7	1	30.205	30.335
92.8	1	30.205	30.325
92.9	1	30.226	30.315
93	1	30.226	30.305
93.1	1	30.226	30.305
93.2	1	30.247	30.315
93.3	1	30.247	30.325
93.4	1	30.268	30.335
93.5	1	30.268	30.345
93.6	1	30.289	30.355
93.7	1	30.31	30.365
93.8	1	30.331	30.375
93.9	1	30.352	30.385
94	1	30.373	30.395
94.1	1	30.394	30.42
94.2	1	30.415	30.46
94.3	1	30.436	30.5

94.4	1	30.457	30.54
94.5	1	30.457	30.58
94.6	1	30.457	30.62
94.7	1	30.457	30.66
94.8	1	30.436	30.7
94.9	1	30.415	30.74
95	1	30.394	30.78
95.1	1	30.352	30.78
95.2	1	30.331	30.74
95.3	1	30.289	30.7
95.4	1	30.247	30.66
95.5	1	30.205	30.62
95.6	1	30.163	30.58
95.7	1	30.122	30.54
95.8	1	30.08	30.5
95.9	1	30.038	30.46
96	1	30.017	30.42
96.1	1	29.996	30.375
96.2	1	29.996	30.325
96.3	1	29.996	30.275
96.4	1	30.017	30.225
96.5	1	30.017	30.175
96.6	1	30.038	30.125
96.7	1	30.038	30.075
96.8	1	30.038	30.025
96.9	1	30.017	29.975
97	1	29.996	29.925
97.1	1	29.954	29.88
97.2	1	29.891	29.84
97.3	1	29.849	29.8
97.4	1	29.786	29.76
97.5	1	29.724	29.72
97.6	1	29.724	29.68
97.7	1	29.619	29.64
97.8	1	29.598	29.6
97.9	1	29.577	29.56
98	1	29.577	29.52
98.1	1	29.598	29.515
98.2	1	29.619	29.545
98.3	1	29.64	29.575
98.4	1	29.682	29.605
98.5	1	29.682	29.635
98.6	1	29.744	29.665
98.7	1	29.786	29.695
98.8	1	29.828	29.725

98.9	1	29.828	29.755
99	1	29.87	29.785
99.1	1	29.975	29.825
99.2	1	30.038	29.875
99.3	1	30.038	29.925
99.4	1	30.101	29.975
99.5	1	30.247	30.025
99.6	1	30.331	30.075
99.7	1	30.394	30.125
99.8	1	30.394	30.175
99.9	1	30.457	30.225
100	1	30.561	30.275
100.1	1	30.603	30.32
100.2	1	30.603	30.36
100.3	1	30.624	30.4
100.4	1	30.645	30.44
100.5	1	30.708	30.48
100.6	1	30.729	30.52
100.7	1	30.729	30.56
100.8	1	30.729	30.6
100.9	1	30.729	30.64
101	1	30.687	30.68
101.1	1	30.687	30.71
101.2	1	30.666	30.73
101.3	1	30.645	30.75
101.4	1	30.624	30.77
101.5	1	30.624	30.79
101.6	1	30.624	30.81
101.7	1	30.624	30.83
101.8	1	30.603	30.85
101.9	1	30.603	30.87
102	1	30.603	30.89
102.1	1	30.603	30.905
102.2	1	30.603	30.915
102.3	1	30.603	30.925
102.4	1	30.603	30.935
102.5	1	30.624	30.945
102.6	1	30.666	30.955
102.7	1	30.687	30.965
102.8	1	30.708	30.975
102.9	1	30.75	30.985
103	1	30.792	30.995
103.1	1	30.834	30.995
103.2	1	30.855	30.985
103.3	1	30.897	30.975

103.4	1	30.938	30.965
103.5	1	30.98	30.955
103.6	1	31.001	30.945
103.7	1	31.043	30.935
103.8	1	31.043	30.925
103.9	1	31.064	30.915
104	1	31.064	30.905
104.1	1	31.064	30.875
104.2	1	31.085	30.825
104.3	1	31.085	30.775
104.4	1	31.085	30.725
104.5	1	31.064	30.675
104.6	1	31.022	30.625
104.7	1	30.98	30.575
104.8	1	30.917	30.525
104.9	1	30.855	30.475
105	1	30.792	30.425
105.1	1	30.708	30.37
105.2	1	30.645	30.31
105.3	1	30.582	30.25
105.4	1	30.519	30.19
105.5	1	30.478	30.13
105.6	1	30.457	30.07
105.7	1	30.436	30.01
105.8	1	30.415	29.95
105.9	1	30.415	29.89
106	1	30.415	29.83
106.1	1	30.415	29.805
106.2	1	30.415	29.815
106.3	1	30.436	29.825
106.4	1	30.457	29.835
106.5	1	30.457	29.845
106.6	1	30.478	29.855
106.7	1	30.499	29.865
106.8	1	30.499	29.875
106.9	1	30.519	29.885
107	1	30.54	29.895
107.1	1	30.54	29.915
107.2	1	30.54	29.945
107.3	1	30.561	29.975
107.4	1	30.582	30.005
107.5	1	30.582	30.035
107.6	1	30.582	30.065
107.7	1	30.603	30.095
107.8	1	30.645	30.125

107.9	1	30.666	30.155
108	1	30.708	30.185
108.1	1	30.708	30.225
108.2	1	30.771	30.275
108.3	1	30.792	30.325
108.4	1	30.834	30.375
108.5	1	30.834	30.425
108.6	1	30.876	30.475
108.7	1	30.938	30.525
108.8	1	30.98	30.575
108.9	1	31.001	30.625
109	1	31.001	30.675
109.1	1	31.043	30.725
109.2	1	31.085	30.775
109.3	1	31.148	30.825
109.4	1	31.148	30.875
109.5	1	31.19	30.925
109.6	1	31.211	30.975
109.7	1	31.295	31.025
109.8	1	31.315	31.075
109.9	1	31.315	31.125
110	1	31.357	31.175
110.1	1	31.441	31.23
110.2	1	31.462	31.29
110.3	1	31.462	31.35
110.4	1	31.504	31.41
110.5	1	31.525	31.47
110.6	1	31.609	31.53
110.7	1	31.609	31.59
110.8	1	31.63	31.65
110.9	1	31.672	31.71
111	1	31.693	31.77
111.1	1	31.818	31.82
111.2	1	31.818	31.86
111.3	1	31.881	31.9
111.4	1	31.965	31.94
111.5	1	32.049	31.98
111.6	1	32.111	32.02
111.7	1	32.195	32.06
111.8	1	32.279	32.1
111.9	1	32.363	32.14
112	1	32.426	32.18
112.1	1	32.488	32.21
112.2	1	32.551	32.23
112.3	1	32.593	32.25

112.4	1	32.635	32.27
112.5	1	32.677	32.29
112.6	1	32.698	32.31
112.7	1	32.698	32.33
112.8	1	32.698	32.35
112.9	1	32.698	32.37
113	1	32.698	32.39
113.1	1	32.698	32.39
113.2	1	32.698	32.37
113.3	1	32.698	32.35
113.4	1	32.656	32.33
113.5	1	32.635	32.31
113.6	1	32.593	32.29
113.7	1	32.572	32.27
113.8	1	32.488	32.25
113.9	1	32.405	32.23
114	1	32.3	32.21
114.1	1	32.216	32.175
114.2	1	32.111	32.125
114.3	1	32.007	32.075
114.4	1	31.881	32.025
114.5	1	31.776	31.975
114.6	1	31.651	31.925
114.7	1	31.546	31.875
114.8	1	31.42	31.825
114.9	1	31.295	31.775
115	1	31.169	31.725
115.1	1	31.064	31.545
115.2	1	30.876	31.235
115.3	1	30.436	30.925
115.4	1	29.849	30.615
115.5	1	29.179	30.305
115.6	1	28.571	29.995
115.7	1	28.027	29.685
115.8	1	27.503	29.375
115.9	1	26.979	29.065
116	1	26.477	28.755
116.1	1	26.079	28.435
116.2	1	25.827	28.105
116.3	1	25.618	27.775
116.4	1	25.429	27.445
116.5	1	25.241	27.115
116.6	1	25.073	26.785
116.7	1	24.885	26.455
116.8	1	24.717	26.125

116.9	1	24.717	25.795
117	1	24.235	25.465
117.1	1	23.9	25.135
117.2	1	23.565	24.805
117.3	1	23.565	24.475
117.4	1	22.853	24.145
117.5	1	22.497	23.815
117.6	1	22.12	23.485
117.7	1	21.785	23.155
117.8	1	21.785	22.825
117.9	1	21.156	22.495
118	1	20.947	22.165
118.1	1	20.758	21.835
118.2	1	20.758	21.505
118.3	1	20.591	21.175
118.4	1	20.297	20.845
118.5	1	20.151	20.515
118.6	1	19.983	20.185
118.7	1	19.983	19.855
118.8	1	19.837	19.525
118.9	1	19.501	19.195
119	1	19.271	18.865
119.1	1	19.271	18.535
119.2	1	19.02	18.205
119.3	1	18.747	17.875
119.4	1	18.203	17.545
119.5	1	18.203	17.215
119.6	1	17.951	16.885
119.7	1	17.658	16.555
119.8	1	17.344	16.225
119.9	1	16.653	15.895
120	1	16.653	15.565
120.1	1	16.318	15.235
120.2	1	15.982	14.905
120.3	1	15.207	14.575
120.4	1	15.207	14.245
120.5	1	14.767	13.915
120.6	1	14.307	13.585
120.7	1	13.846	13.255
120.8	1	13.406	12.925
120.9	1	12.987	12.595
121	1	12.589	12.265
121.1	1	12.191	11.935
121.2	1	11.814	11.605
121.3	1	11.437	11.275



121.4	1	11.039	10.945
121.5	1	10.662	10.615
121.6	1	10.285	10.285
121.7	1	9.929	9.955
121.8	1	9.594	9.625
121.9	1	9.238	9.295
122	1	8.902	8.965
122.1	1	8.567	8.635
122.2	1	8.211	8.305
122.3	1	8.211	7.975
122.4	1	7.562	7.645
122.5	1	7.269	7.315
122.6	1	6.975	6.985
122.7	1	6.661	6.655
122.8	1	6.368	6.325
122.9	1	6.054	5.995
123	1	5.718	5.665
123.1	1	5.383	5.335
123.2	1	5.069	5.005
123.3	1	4.713	4.675
123.4	1	4.336	4.345
123.5	1	3.959	4.015
123.6	1	3.561	3.685
123.7	1	3.163	3.355
123.8	1	2.786	3.025
123.9	1	2.409	2.695
124	1	2.011	2.365
124.1	1	1.613	2.09
124.2	1	1.194	1.87
124.3	1	0.712	1.65
124.4	1	0.335	1.43
124.5	1	0.251	1.21
124.6	1	0.23	0.99
124.7	1	0.147	0.77
124.8	1	0.105	0.55
124.9	1	0.126	0.33
125	1	0.126	0.11
125.1	1	0.063	0
125.2	1	0.084	0
125.3	1	0.084	0
125.4	1	0.042	0
125.5	1	0.042	0
125.6	1	0.063	0
125.7	1	0.021	0
125.8	1	0.021	0

125.9	1	0.021	0
126	1	0.021	0
126.1	1	0	0
126.2	1	0.021	0
126.3	1	0	0
126.4	1	0	0
126.5	1	0	0
126.6	1	0	0
126.7	1	0	0
126.8	1	0	0
126.9	1	0	0
127	1	0	0
127.1	1	0	0
127.2	1	0	0
127.3	1	0	0
127.4	1	0	0
127.5	1	0	0
127.6	1	0	0
127.7	1	0	0
127.8	1	0	0
127.9	1	0	0
128	1	0	0
128.1	1	0	0
128.2	1	0	0
128.3	1	0	0
128.4	1	0	0
128.5	1	0	0
128.6	1	0	0
128.7	1	0	0
128.8	1	0	0
128.9	1	0	0
129	1	0	0
129.1	1	0	0
129.2	1	0	0
129.3	1	0	0
129.4	1	0	0
129.5	1	0	0
129.6	1	0	0
129.7	1	0	0
129.8	1	0	0
129.9	1	0	0
130	1	-0.021	0
130.1	1	0	0
130.2	1	0	0
130.3	1	0	0

130.4	1	0	0
130.5	1	0	0
130.6	1	0	0
130.7	1	-0.021	0
130.8	1	0	0
130.9	1	0	0
131	1	0	0
131.1	1	0	0
131.2	1	0	0
131.3	1	0	0
131.4	1	0	0
131.5	1	0	0
131.6	1	-0.021	0
131.7	1	-0.021	0
131.8	1	0	0
131.9	1	0	0
132	1	0	0
132.1	1	0	0
132.2	1	0	0
132.3	1	0	0
132.4	1	0	0
132.5	1	0	0
132.6	1	0	0
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132.8	1	0	0
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133.8	1	-0.021	0
133.9	1	0	0
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134.6	1	0	0
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134.8	1	-0.021	0

134.9	1	0	0
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137.9	1	-0.021	0
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138.8	1	-0.021	0
138.9	1	0	0
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139.1	1	-0.021	0
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139.3	1	-0.021	0

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161.9	1	-0.021	0
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162.2	1	0.084	0
162.3	1	0.126	0
162.4	1	0.147	0
162.5	1	0.189	0
162.6	1	0.23	0
162.7	1	0.272	0
162.8	1	0.314	0
162.9	1	0.377	0
163	1	0.44	0
163.1	1	0.545	0.165
163.2	1	0.712	0.495
163.3	1	0.943	0.825
163.4	1	0.943	1.155
163.5	1	1.341	1.485
163.6	1	1.529	1.815
163.7	1	1.676	2.145
163.8	1	1.801	2.475
163.9	1	1.927	2.805
164	1	2.074	3.135
164.1	1	2.22	3.465
164.2	1	2.409	3.795
164.3	1	2.409	4.125
164.4	1	2.891	4.455
164.5	1	3.163	4.785
164.6	1	3.435	5.115
164.7	1	3.708	5.445
164.8	1	3.708	5.775
164.9	1	4.315	6.105
165	1	4.671	6.435
165.1	1	5.027	6.765
165.2	1	5.027	7.095
165.3	1	5.425	7.425
165.4	1	6.326	7.755
165.5	1	6.829	8.085
165.6	1	6.829	8.415
165.7	1	7.31	8.745
165.8	1	8.316	9.075
165.9	1	8.819	9.405
166	1	9.321	9.735
166.1	1	9.321	10.065
166.2	1	9.824	10.395
166.3	1	10.62	10.725

166.4	1	10.955	11.055
166.5	1	10.955	11.385
166.6	1	11.269	11.715
166.7	1	11.605	12.045
166.8	1	12.317	12.375
166.9	1	12.317	12.705
167	1	12.694	13.035
167.1	1	13.092	13.365
167.2	1	13.888	13.695
167.3	1	13.888	14.025
167.4	1	14.286	14.355
167.5	1	14.684	14.685
167.6	1	15.061	15.015
167.7	1	15.857	15.345
167.8	1	15.857	15.675
167.9	1	16.255	16.005
168	1	16.653	16.335
168.1	1	17.009	16.665
168.2	1	17.323	16.995
168.3	1	17.658	17.325
168.4	1	17.972	17.655
168.5	1	18.287	17.985
168.6	1	18.58	18.315
168.7	1	18.873	18.645
168.8	1	19.124	18.975
168.9	1	19.376	19.305
169	1	19.585	19.635
169.1	1	19.816	19.92
169.2	1	20.025	20.16
169.3	1	20.235	20.4
169.4	1	20.465	20.64
169.5	1	20.716	20.88
169.6	1	20.968	21.12
169.7	1	21.198	21.36
169.8	1	21.429	21.6
169.9	1	21.659	21.84
170	1	21.889	22.08
170.1	1	22.12	22.305
170.2	1	22.35	22.515
170.3	1	22.581	22.725
170.4	1	22.811	22.935
170.5	1	23.041	23.145
170.6	1	23.272	23.355
170.7	1	23.502	23.565
170.8	1	23.733	23.775

170.9	1	23.963	23.985
171	1	24.194	24.195
171.1	1	24.424	24.375
171.2	1	24.612	24.525
171.3	1	24.822	24.675
171.4	1	25.031	24.825
171.5	1	25.22	24.975
171.6	1	25.408	25.125
171.7	1	25.576	25.275
171.8	1	25.723	25.425
171.9	1	25.848	25.575
172	1	25.995	25.725
172.1	1	26.121	25.83
172.2	1	26.225	25.89
172.3	1	26.309	25.95
172.4	1	26.351	26.01
172.5	1	26.393	26.07
172.6	1	26.435	26.13
172.7	1	26.477	26.19
172.8	1	26.498	26.25
172.9	1	26.519	26.31
173	1	26.519	26.37
173.1	1	26.477	26.365
173.2	1	26.456	26.295
173.3	1	26.414	26.225
173.4	1	26.414	26.155
173.5	1	26.309	26.085
173.6	1	26.246	26.015
173.7	1	26.204	25.945
173.8	1	26.204	25.875
173.9	1	26.121	25.805
174	1	25.995	25.735
174.1	1	25.89	25.67
174.2	1	25.89	25.61
174.3	1	25.89	25.55
174.4	1	25.597	25.49
174.5	1	25.471	25.43
174.6	1	25.367	25.37
174.7	1	25.367	25.31
174.8	1	25.262	25.25
174.9	1	25.031	25.19
175	1	24.906	25.13
175.1	1	24.906	25.08
175.2	1	24.801	25.04
175.3	1	24.633	25

175.4	1	24.571	24.96
175.5	1	24.529	24.92
175.6	1	24.529	24.88
175.7	1	24.529	24.84
175.8	1	24.529	24.8
175.9	1	24.55	24.76
176	1	24.55	24.72
176.1	1	24.592	24.715
176.2	1	24.612	24.745
176.3	1	24.738	24.775
176.4	1	24.738	24.805
176.5	1	24.822	24.835
176.6	1	24.906	24.865
176.7	1	24.99	24.895
176.8	1	25.157	24.925
176.9	1	25.157	24.955
177	1	25.241	24.985
177.1	1	25.304	25.01
177.2	1	25.367	25.03
177.3	1	25.408	25.05
177.4	1	25.429	25.07
177.5	1	25.429	25.09
177.6	1	25.429	25.11
177.7	1	25.388	25.13
177.8	1	25.388	25.15
177.9	1	25.367	25.17
178	1	25.367	25.19
178.1	1	25.346	25.21
178.2	1	25.325	25.23
178.3	1	25.304	25.25
178.4	1	25.304	25.27
178.5	1	25.283	25.29
178.6	1	25.283	25.31
178.7	1	25.283	25.33
178.8	1	25.283	25.35
178.9	1	25.304	25.37
179	1	25.325	25.39
179.1	1	25.388	25.42
179.2	1	25.429	25.46
179.3	1	25.492	25.5
179.4	1	25.555	25.54
179.5	1	25.639	25.58
179.6	1	25.744	25.62
179.7	1	25.827	25.66
179.8	1	25.953	25.7

179.9	1	26.058	25.74
180	1	26.163	25.78
180.1	1	26.267	25.87
180.2	1	26.393	26.01
180.3	1	26.498	26.15
180.4	1	26.623	26.29
180.5	1	26.728	26.43
180.6	1	26.791	26.57
180.7	1	26.854	26.71
180.8	1	26.896	26.85
180.9	1	26.917	26.99
181	1	26.917	27.13
181.1	1	26.875	27.165
181.2	1	26.833	27.095
181.3	1	26.77	27.025
181.4	1	26.686	26.955
181.5	1	26.623	26.885
181.6	1	26.561	26.815
181.7	1	26.477	26.745
181.8	1	26.414	26.675
181.9	1	26.33	26.605
182	1	26.225	26.535
182.1	1	26.079	26.375
182.2	1	25.806	26.125
182.3	1	25.367	25.875
182.4	1	24.864	25.625
182.5	1	24.34	25.375
182.6	1	23.837	25.125
182.7	1	23.419	24.875
182.8	1	23.104	24.625
182.9	1	22.853	24.375
183	1	22.853	24.125
183.1	1	22.497	23.935
183.2	1	22.308	23.805
183.3	1	22.162	23.675
183.4	1	22.015	23.545
183.5	1	22.015	23.415
183.6	1	21.764	23.285
183.7	1	21.638	23.155
183.8	1	21.512	23.025
183.9	1	21.512	22.895
184	1	21.345	22.765
184.1	1	20.947	22.535
184.2	1	20.758	22.205
184.3	1	20.758	21.875

184.4	1	20.549	21.545
184.5	1	20.13	21.215
184.6	1	19.879	20.885
184.7	1	19.648	20.555
184.8	1	19.648	20.225
184.9	1	19.418	19.895
185	1	19.083	19.565
185.1	1	18.936	19.315
185.2	1	18.936	19.145
185.3	1	18.81	18.975
185.4	1	18.705	18.805
185.5	1	18.517	18.635
185.6	1	18.433	18.465
185.7	1	18.433	18.295
185.8	1	18.349	18.125
185.9	1	18.266	17.955
186	1	18.119	17.785
186.1	1	18.119	17.675
186.2	1	18.056	17.625
186.3	1	17.993	17.575
186.4	1	17.93	17.525
186.5	1	17.868	17.475
186.6	1	17.826	17.425
186.7	1	17.763	17.375
186.8	1	17.742	17.325
186.9	1	17.721	17.275
187	1	17.7	17.225
187.1	1	17.679	17.245
187.2	1	17.679	17.335
187.3	1	17.658	17.425
187.4	1	17.637	17.515
187.5	1	17.658	17.605
187.6	1	17.7	17.695
187.7	1	17.784	17.785
187.8	1	17.868	17.875
187.9	1	17.951	17.965
188	1	18.035	18.055
188.1	1	18.077	18.125
188.2	1	18.119	18.175
188.3	1	18.161	18.225
188.4	1	18.203	18.275
188.5	1	18.245	18.325
188.6	1	18.287	18.375
188.7	1	18.37	18.425
188.8	1	18.475	18.475

188.9	1	18.58	18.525
189	1	18.705	18.575
189.1	1	18.81	18.67
189.2	1	18.936	18.81
189.3	1	19.062	18.95
189.4	1	19.208	19.09
189.5	1	19.376	19.23
189.6	1	19.522	19.37
189.7	1	19.711	19.51
189.8	1	19.899	19.65
189.9	1	20.109	19.79
190	1	20.318	19.93
190.1	1	20.528	20.11
190.2	1	20.758	20.33
190.3	1	20.989	20.55
190.4	1	21.219	20.77
190.5	1	21.47	20.99
190.6	1	21.743	21.21
190.7	1	21.994	21.43
190.8	1	22.266	21.65
190.9	1	22.518	21.87
191	1	22.79	22.09
191.1	1	23.041	22.315
191.2	1	23.314	22.545
191.3	1	23.607	22.775
191.4	1	23.879	23.005
191.5	1	24.173	23.235
191.6	1	24.466	23.465
191.7	1	24.78	23.695
191.8	1	25.094	23.925
191.9	1	25.429	24.155
192	1	25.744	24.385
192.1	1	26.037	24.64
192.2	1	26.351	24.92
192.3	1	26.665	25.2
192.4	1	26.959	25.48
192.5	1	27.273	25.76
192.6	1	27.273	26.04
192.7	1	27.859	26.32
192.8	1	28.153	26.6
192.9	1	28.425	26.88
193	1	28.425	27.16
193.1	1	28.718	27.46
193.2	1	29.2	27.78
193.3	1	29.43	28.1



193.4	1	29.64	28.42
193.5	1	29.64	28.74
193.6	1	30.08	29.06
193.7	1	30.289	29.38
193.8	1	30.519	29.7
193.9	1	30.519	30.02
194	1	30.729	30.34
194.1	1	31.169	30.65
194.2	1	31.399	30.95
194.3	1	31.399	31.25
194.4	1	31.63	31.55
194.5	1	31.86	31.85
194.6	1	32.342	32.15
194.7	1	32.593	32.45
194.8	1	32.593	32.75
194.9	1	32.845	33.05
195	1	33.096	33.35
195.1	1	33.599	33.635
195.2	1	33.599	33.905
195.3	1	33.871	34.175
195.4	1	34.122	34.445
195.5	1	34.374	34.715
195.6	1	34.897	34.985
195.7	1	34.897	35.255
195.8	1	35.149	35.525
195.9	1	35.4	35.795
196	1	35.924	36.065
196.1	1	35.924	36.255
196.2	1	36.175	36.365
196.3	1	36.426	36.475
196.4	1	36.657	36.585
196.5	1	36.866	36.695
196.6	1	37.055	36.805
196.7	1	37.202	36.915
196.8	1	37.369	37.025
196.9	1	37.537	37.135
197	1	37.704	37.245
197.1	1	37.893	37.4
197.2	1	38.06	37.6
197.3	1	38.228	37.8
197.4	1	38.395	38
197.5	1	38.542	38.2
197.6	1	38.71	38.4
197.7	1	38.856	38.6
197.8	1	38.982	38.8

197.9	1	39.108	39
198	1	39.233	39.2
198.1	1	39.338	39.36
198.2	1	39.464	39.48
198.3	1	39.569	39.6
198.4	1	39.673	39.72
198.5	1	39.778	39.84
198.6	1	39.904	39.96
198.7	1	40.029	40.08
198.8	1	40.155	40.2
198.9	1	40.281	40.32
199	1	40.406	40.44
199.1	1	40.532	40.58
199.2	1	40.658	40.74
199.3	1	40.783	40.9
199.4	1	40.909	41.06
199.5	1	41.035	41.22
199.6	1	41.16	41.38
199.7	1	41.307	41.54
199.8	1	41.454	41.7
199.9	1	41.6	41.86
200	1	41.747	42.02
200.1	1	41.915	42.17
200.2	1	41.915	42.31
200.3	1	42.229	42.45
200.4	1	42.396	42.59
200.5	1	42.564	42.73
200.6	1	42.731	42.87
200.7	1	42.899	43.01
200.8	1	43.088	43.15
200.9	1	43.255	43.29
201	1	43.423	43.43
201.1	1	43.59	43.58
201.2	1	43.779	43.74
201.3	1	43.779	43.9
201.4	1	44.114	44.06
201.5	1	44.302	44.22
201.6	1	44.47	44.38
201.7	1	44.638	44.54
201.8	1	44.805	44.7
201.9	1	44.973	44.86
202	1	45.14	45.02
202.1	1	45.308	45.145
202.2	1	45.308	45.235
202.3	1	45.622	45.325

202.4	1	45.79	45.415
202.5	1	45.957	45.505
202.6	1	46.104	45.595
202.7	1	46.104	45.685
202.8	1	46.376	45.775
202.9	1	46.502	45.865
203	1	46.586	45.955
203.1	1	46.669	46.045
203.2	1	46.669	46.12
203.3	1	46.837	46.2
203.4	1	46.921	46.28
203.5	1	47.026	46.36
203.6	1	47.026	46.44
203.7	1	47.109	46.52
203.8	1	47.298	46.6
203.9	1	47.382	46.68
204	1	47.382	46.76
204.1	1	47.465	46.835
204.2	1	47.549	46.905
204.3	1	47.717	46.975
204.4	1	47.78	47.045
204.5	1	47.78	47.115
204.6	1	47.842	47.185
204.7	1	47.905	47.255
204.8	1	47.968	47.325
204.9	1	47.968	47.395
205	1	47.989	47.465
205.1	1	48.01	47.5
205.2	1	48.031	47.5
205.3	1	48.031	47.5
205.4	1	48.052	47.5
205.5	1	48.052	47.5
205.6	1	48.052	47.5
205.7	1	48.052	47.5
205.8	1	48.031	47.5
205.9	1	48.031	47.5
206	1	47.989	47.5
206.1	1	47.947	47.49
206.2	1	47.905	47.47
206.3	1	47.842	47.45
206.4	1	47.801	47.43
206.5	1	47.738	47.41
206.6	1	47.696	47.39
206.7	1	47.633	47.37
206.8	1	47.591	47.35

206.9	1	47.528	47.33
207	1	47.486	47.31
207.1	1	47.465	47.295
207.2	1	47.445	47.285
207.3	1	47.445	47.275
207.4	1	47.445	47.265
207.5	1	47.445	47.255
207.6	1	47.465	47.245
207.7	1	47.465	47.235
207.8	1	47.465	47.225
207.9	1	47.486	47.215
208	1	47.507	47.205
208.1	1	47.507	47.19
208.2	1	47.528	47.17
208.3	1	47.528	47.15
208.4	1	47.549	47.13
208.5	1	47.57	47.11
208.6	1	47.57	47.09
208.7	1	47.57	47.07
208.8	1	47.57	47.05
208.9	1	47.549	47.03
209	1	47.528	47.01
209.1	1	47.486	47
209.2	1	47.465	47
209.3	1	47.445	47
209.4	1	47.424	47
209.5	1	47.424	47
209.6	1	47.403	47
209.7	1	47.403	47
209.8	1	47.382	47
209.9	1	47.382	47
210	1	47.382	47
210.1	1	47.382	47
210.2	1	47.382	47
210.3	1	47.361	47
210.4	1	47.361	47
210.5	1	47.361	47
210.6	1	47.361	47
210.7	1	47.361	47
210.8	1	47.361	47
210.9	1	47.361	47
211	1	47.361	47
211.1	1	47.361	47
211.2	1	47.361	47
211.3	1	47.361	47

211.4	1	47.361	47
211.5	1	47.361	47
211.6	1	47.361	47
211.7	1	47.361	47
211.8	1	47.361	47
211.9	1	47.361	47
212	1	47.34	47
212.1	1	47.34	47
212.2	1	47.34	47
212.3	1	47.319	47
212.4	1	47.319	47
212.5	1	47.319	47
212.6	1	47.319	47
212.7	1	47.319	47
212.8	1	47.319	47
212.9	1	47.319	47
213	1	47.319	47
213.1	1	47.319	47.01
213.2	1	47.319	47.03
213.3	1	47.319	47.05
213.4	1	47.319	47.07
213.5	1	47.34	47.09
213.6	1	47.34	47.11
213.7	1	47.34	47.13
213.8	1	47.361	47.15
213.9	1	47.382	47.17
214	1	47.403	47.19
214.1	1	47.403	47.21
214.2	1	47.424	47.23
214.3	1	47.465	47.25
214.4	1	47.528	47.27
214.5	1	47.528	47.29
214.6	1	47.57	47.31
214.7	1	47.612	47.33
214.8	1	47.633	47.35
214.9	1	47.717	47.37
215	1	47.717	47.39
215.1	1	47.78	47.425
215.2	1	47.822	47.475
215.3	1	47.863	47.525
215.4	1	47.926	47.575
215.5	1	47.968	47.625
215.6	1	48.01	47.675
215.7	1	48.073	47.725
215.8	1	48.115	47.775

215.9	1	48.157	47.825
216	1	48.22	47.875
216.1	1	48.261	47.93
216.2	1	48.303	47.99
216.3	1	48.345	48.05
216.4	1	48.408	48.11
216.5	1	48.45	48.17
216.6	1	48.492	48.23
216.7	1	48.534	48.29
216.8	1	48.576	48.35
216.9	1	48.618	48.41
217	1	48.638	48.47
217.1	1	48.68	48.53
217.2	1	48.722	48.59
217.3	1	48.764	48.65
217.4	1	48.806	48.71
217.5	1	48.827	48.77
217.6	1	48.869	48.83
217.7	1	48.911	48.89
217.8	1	48.932	48.95
217.9	1	48.974	49.01
218	1	49.016	49.07
218.1	1	49.057	49.12
218.2	1	49.12	49.16
218.3	1	49.162	49.2
218.4	1	49.204	49.24
218.5	1	49.246	49.28
218.6	1	49.288	49.32
218.7	1	49.33	49.36
218.8	1	49.393	49.4
218.9	1	49.434	49.44
219	1	49.476	49.48
219.1	1	49.518	49.525
219.2	1	49.56	49.575
219.3	1	49.602	49.625
219.4	1	49.644	49.675
219.5	1	49.686	49.725
219.6	1	49.728	49.775
219.7	1	49.77	49.825
219.8	1	49.832	49.875
219.9	1	49.874	49.925
220	1	49.916	49.975
220.1	1	49.958	50.03
220.2	1	50	50.09
220.3	1	50.063	50.15

220.4	1	50.105	50.21
220.5	1	50.168	50.27
220.6	1	50.23	50.33
220.7	1	50.272	50.39
220.8	1	50.335	50.45
220.9	1	50.398	50.51
221	1	50.461	50.57
221.1	1	50.461	50.62
221.2	1	50.566	50.66
221.3	1	50.628	50.7
221.4	1	50.691	50.74
221.5	1	50.691	50.78
221.6	1	50.796	50.82
221.7	1	50.859	50.86
221.8	1	50.901	50.9
221.9	1	50.901	50.94
222	1	50.964	50.98
222.1	1	51.089	51.025
222.2	1	51.131	51.075
222.3	1	51.194	51.125
222.4	1	51.194	51.175
222.5	1	51.257	51.225
222.6	1	51.362	51.275
222.7	1	51.424	51.325
222.8	1	51.424	51.375
222.9	1	51.466	51.425
223	1	51.571	51.475
223.1	1	51.634	51.535
223.2	1	51.634	51.605
223.3	1	51.676	51.675
223.4	1	51.739	51.745
223.5	1	51.843	51.815
223.6	1	51.885	51.885
223.7	1	51.885	51.955
223.8	1	51.948	52.025
223.9	1	52.011	52.095
224	1	52.116	52.165
224.1	1	52.116	52.25
224.2	1	52.178	52.35
224.3	1	52.241	52.45
224.4	1	52.304	52.55
224.5	1	52.367	52.65
224.6	1	52.43	52.75
224.7	1	52.493	52.85
224.8	1	52.576	52.95

224.9	1	52.744	53.05
225	1	52.744	53.15
225.1	1	52.828	53.245
225.2	1	52.933	53.335
225.3	1	53.016	53.425
225.4	1	53.121	53.515
225.5	1	53.226	53.605
225.6	1	53.31	53.695
225.7	1	53.414	53.785
225.8	1	53.519	53.875
225.9	1	53.624	53.965
226	1	53.708	54.055
226.1	1	53.812	54.125
226.2	1	53.812	54.175
226.3	1	54.022	54.225
226.4	1	54.106	54.275
226.5	1	54.21	54.325
226.6	1	54.315	54.375
226.7	1	54.399	54.425
226.8	1	54.462	54.475
226.9	1	54.525	54.525
227	1	54.587	54.575
227.1	1	54.65	54.615
227.2	1	54.692	54.645
227.3	1	54.755	54.675
227.4	1	54.797	54.705
227.5	1	54.86	54.735
227.6	1	54.902	54.765
227.7	1	54.923	54.795
227.8	1	54.964	54.825
227.9	1	55.006	54.855
228	1	55.027	54.885
228.1	1	55.048	54.905
228.2	1	55.069	54.915
228.3	1	55.069	54.925
228.4	1	55.09	54.935
228.5	1	55.111	54.945
228.6	1	55.111	54.955
228.7	1	55.132	54.965
228.8	1	55.153	54.975
228.9	1	55.153	54.985
229	1	55.153	54.995
229.1	1	55.153	54.995
229.2	1	55.153	54.985
229.3	1	55.132	54.975



229.4	1	55.132	54.965
229.5	1	55.111	54.955
229.6	1	55.111	54.945
229.7	1	55.09	54.935
229.8	1	55.09	54.925
229.9	1	55.069	54.915
230	1	55.048	54.905
230.1	1	55.027	54.885
230.2	1	55.006	54.855
230.3	1	54.985	54.825
230.4	1	54.964	54.795
230.5	1	54.943	54.765
230.6	1	54.923	54.735
230.7	1	54.923	54.705
230.8	1	54.881	54.675
230.9	1	54.86	54.645
231	1	54.839	54.615
231.1	1	54.818	54.6
231.2	1	54.818	54.6
231.3	1	54.776	54.6
231.4	1	54.755	54.6
231.5	1	54.734	54.6
231.6	1	54.734	54.6
231.7	1	54.713	54.6
231.8	1	54.713	54.6
231.9	1	54.713	54.6
232	1	54.713	54.6
232.1	1	54.713	54.61
232.2	1	54.776	54.63
232.3	1	54.818	54.65
232.4	1	54.86	54.67
232.5	1	54.86	54.69
232.6	1	54.902	54.71
232.7	1	54.985	54.73
232.8	1	55.027	54.75
232.9	1	55.027	54.77
233	1	55.048	54.79
233.1	1	55.09	54.815
233.2	1	55.132	54.845
233.3	1	55.132	54.875
233.4	1	55.153	54.905
233.5	1	55.195	54.935
233.6	1	55.216	54.965
233.7	1	55.237	54.995
233.8	1	55.258	55.025

233.9	1	55.3	55.055
234	1	55.32	55.085
234.1	1	55.362	55.12
234.2	1	55.404	55.16
234.3	1	55.446	55.2
234.4	1	55.488	55.24
234.5	1	55.53	55.28
234.6	1	55.572	55.32
234.7	1	55.614	55.36
234.8	1	55.677	55.4
234.9	1	55.718	55.44
235	1	55.76	55.48
235.1	1	55.802	55.51
235.2	1	55.865	55.53
235.3	1	55.907	55.55
235.4	1	55.949	55.57
235.5	1	55.991	55.59
235.6	1	56.033	55.61
235.7	1	56.075	55.63
235.8	1	56.116	55.65
235.9	1	56.158	55.67
236	1	56.2	55.69
236.1	1	56.242	55.72
236.2	1	56.284	55.76
236.3	1	56.326	55.8
236.4	1	56.347	55.84
236.5	1	56.389	55.88
236.6	1	56.431	55.92
236.7	1	56.473	55.96
236.8	1	56.535	56
236.9	1	56.556	56.04
237	1	56.598	56.08
237.1	1	56.64	56.11
237.2	1	56.682	56.13
237.3	1	56.703	56.15
237.4	1	56.745	56.17
237.5	1	56.787	56.19
237.6	1	56.829	56.21
237.7	1	56.85	56.23
237.8	1	56.871	56.25
237.9	1	56.912	56.27
238	1	56.933	56.29
238.1	1	56.975	56.315
238.2	1	56.996	56.345
238.3	1	57.038	56.375

238.4	1	57.059	56.405
238.5	1	57.08	56.435
238.6	1	57.122	56.465
238.7	1	57.143	56.495
238.8	1	57.164	56.525
238.9	1	57.185	56.555
239	1	57.206	56.585
239.1	1	57.206	56.605
239.2	1	57.248	56.615
239.3	1	57.269	56.625
239.4	1	57.269	56.635
239.5	1	57.269	56.645
239.6	1	57.29	56.655
239.7	1	57.31	56.665
239.8	1	57.31	56.675
239.9	1	57.31	56.685
240	1	57.31	56.695
240.1	1	57.31	56.7
240.2	1	57.31	56.7
240.3	1	57.31	56.7
240.4	1	57.31	56.7
240.5	1	57.269	56.7
240.6	1	57.248	56.7
240.7	1	57.227	56.7
240.8	1	57.227	56.7
240.9	1	57.206	56.7
241	1	57.164	56.7
241.1	1	57.143	56.69
241.2	1	57.143	56.67
241.3	1	57.122	56.65
241.4	1	57.101	56.63
241.5	1	57.038	56.61
241.6	1	57.017	56.59
241.7	1	57.017	56.57
241.8	1	56.996	56.55
241.9	1	56.975	56.53
242	1	56.954	56.51
242.1	1	56.954	56.5
242.2	1	56.933	56.5
242.3	1	56.933	56.5
242.4	1	56.912	56.5
242.5	1	56.912	56.5
242.6	1	56.912	56.5
242.7	1	56.892	56.5
242.8	1	56.892	56.5

242.9	1	56.871	56.5
243	1	56.871	56.5
243.1	1	56.85	56.5
243.2	1	56.829	56.5
243.3	1	56.808	56.5
243.4	1	56.808	56.5
243.5	1	56.787	56.5
243.6	1	56.766	56.5
243.7	1	56.745	56.5
243.8	1	56.724	56.5
243.9	1	56.703	56.5
244	1	56.682	56.5
244.1	1	56.661	56.5
244.2	1	56.619	56.5
244.3	1	56.598	56.5
244.4	1	56.577	56.5
244.5	1	56.535	56.5
244.6	1	56.514	56.5
244.7	1	56.494	56.5
244.8	1	56.473	56.5
244.9	1	56.452	56.5
245	1	56.431	56.5
245.1	1	56.431	56.5
245.2	1	56.41	56.5
245.3	1	56.389	56.5
245.4	1	56.389	56.5
245.5	1	56.368	56.5
245.6	1	56.368	56.5
245.7	1	56.347	56.5
245.8	1	56.347	56.5
245.9	1	56.326	56.5
246	1	56.326	56.5
246.1	1	56.326	56.5
246.2	1	56.305	56.5
246.3	1	56.305	56.5
246.4	1	56.305	56.5
246.5	1	56.284	56.5
246.6	1	56.284	56.5
246.7	1	56.284	56.5
246.8	1	56.263	56.5
246.9	1	56.263	56.5
247	1	56.263	56.5
247.1	1	56.242	56.495
247.2	1	56.242	56.485
247.3	1	56.242	56.475

247.4	1	56.242	56.465
247.5	1	56.242	56.455
247.6	1	56.242	56.445
247.7	1	56.221	56.435
247.8	1	56.221	56.425
247.9	1	56.221	56.415
248	1	56.221	56.405
248.1	1	56.2	56.385
248.2	1	56.2	56.355
248.3	1	56.179	56.325
248.4	1	56.179	56.295
248.5	1	56.158	56.265
248.6	1	56.137	56.235
248.7	1	56.116	56.205
248.8	1	56.096	56.175
248.9	1	56.054	56.145
249	1	56.033	56.115
249.1	1	56.033	56.085
249.2	1	55.949	56.055
249.3	1	55.907	56.025
249.4	1	55.865	55.995
249.5	1	55.865	55.965
249.6	1	55.802	55.935
249.7	1	55.698	55.905
249.8	1	55.614	55.875
249.9	1	55.551	55.845
250	1	55.551	55.815
250.1	1	55.404	55.765
250.2	1	55.341	55.695
250.3	1	55.258	55.625
250.4	1	55.258	55.555
250.5	1	55.195	55.485
250.6	1	55.027	55.415
250.7	1	54.943	55.345
250.8	1	54.943	55.275
250.9	1	54.86	55.205
251	1	54.776	55.135
251.1	1	54.629	55.075
251.2	1	54.545	55.025
251.3	1	54.545	54.975
251.4	1	54.483	54.925
251.5	1	54.42	54.875
251.6	1	54.315	54.825
251.7	1	54.315	54.775
251.8	1	54.273	54.725

251.9	1	54.252	54.675
252	1	54.21	54.625
252.1	1	54.21	54.58
252.2	1	54.21	54.54
252.3	1	54.168	54.5
252.4	1	54.168	54.46
252.5	1	54.168	54.42
252.6	1	54.168	54.38
252.7	1	54.168	54.34
252.8	1	54.168	54.3
252.9	1	54.168	54.26
253	1	54.168	54.22
253.1	1	54.168	54.19
253.2	1	54.147	54.17
253.3	1	54.127	54.15
253.4	1	54.127	54.13
253.5	1	54.106	54.11
253.6	1	54.085	54.09
253.7	1	54.064	54.07
253.8	1	54.043	54.05
253.9	1	54.001	54.03
254	1	53.959	54.01
254.1	1	53.917	53.985
254.2	1	53.875	53.955
254.3	1	53.812	53.925
254.4	1	53.729	53.895
254.5	1	53.666	53.865
254.6	1	53.603	53.835
254.7	1	53.54	53.805
254.8	1	53.477	53.775
254.9	1	53.393	53.745
255	1	53.331	53.715
255.1	1	53.289	53.695
255.2	1	53.289	53.685
255.3	1	53.289	53.675
255.4	1	53.289	53.665
255.5	1	53.31	53.655
255.6	1	53.331	53.645
255.7	1	53.352	53.635
255.8	1	53.372	53.625
255.9	1	53.393	53.615
256	1	53.414	53.605
256.1	1	53.456	53.615
256.2	1	53.477	53.645
256.3	1	53.519	53.675

256.4	1	53.54	53.705
256.5	1	53.54	53.735
256.6	1	53.561	53.765
256.7	1	53.561	53.795
256.8	1	53.561	53.825
256.9	1	53.561	53.855
257	1	53.54	53.885
257.1	1	53.54	53.905
257.2	1	53.519	53.915
257.3	1	53.519	53.925
257.4	1	53.498	53.935
257.5	1	53.498	53.945
257.6	1	53.498	53.955
257.7	1	53.519	53.965
257.8	1	53.54	53.975
257.9	1	53.561	53.985
258	1	53.582	53.995
258.1	1	53.603	54.005
258.2	1	53.603	54.015
258.3	1	53.666	54.025
258.4	1	53.666	54.035
258.5	1	53.687	54.045
258.6	1	53.687	54.055
258.7	1	53.708	54.065
258.8	1	53.729	54.075
258.9	1	53.729	54.085
259	1	53.729	54.095
259.1	1	53.729	54.1
259.2	1	53.729	54.1
259.3	1	53.729	54.1
259.4	1	53.729	54.1
259.5	1	53.729	54.1
259.6	1	53.708	54.1
259.7	1	53.708	54.1
259.8	1	53.708	54.1
259.9	1	53.708	54.1
260	1	53.708	54.1
260.1	1	53.708	54.085
260.2	1	53.708	54.055
260.3	1	53.687	54.025
260.4	1	53.687	53.995
260.5	1	53.645	53.965
260.6	1	53.561	53.935
260.7	1	53.519	53.905
260.8	1	53.519	53.875

260.9	1	53.456	53.845
261	1	53.393	53.815
261.1	1	53.289	53.78
261.2	1	53.226	53.74
261.3	1	53.226	53.7
261.4	1	53.184	53.66
261.5	1	53.121	53.62
261.6	1	53.037	53.58
261.7	1	53.037	53.54
261.8	1	52.995	53.5
261.9	1	52.974	53.46
262	1	52.974	53.42
262.1	1	52.974	53.38
262.2	1	52.974	53.34
262.3	1	52.995	53.3
262.4	1	52.995	53.26
262.5	1	52.974	53.22
262.6	1	52.974	53.18
262.7	1	52.933	53.14
262.8	1	52.891	53.1
262.9	1	52.849	53.06
263	1	52.786	53.02
263.1	1	52.702	52.98
263.2	1	52.639	52.94
263.3	1	52.556	52.9
263.4	1	52.472	52.86
263.5	1	52.409	52.82
263.6	1	52.346	52.78
263.7	1	52.304	52.74
263.8	1	52.283	52.7
263.9	1	52.262	52.66
264	1	52.262	52.62
264.1	1	52.241	52.575
264.2	1	52.241	52.525
264.3	1	52.22	52.475
264.4	1	52.22	52.425
264.5	1	52.199	52.375
264.6	1	52.199	52.325
264.7	1	52.178	52.275
264.8	1	52.178	52.225
264.9	1	52.178	52.175
265	1	52.158	52.125
265.1	1	52.158	52.115
265.2	1	52.137	52.145
265.3	1	52.137	52.175



265.4	1	52.095	52.205
265.5	1	52.074	52.235
265.6	1	52.053	52.265
265.7	1	52.032	52.295
265.8	1	52.011	52.325
265.9	1	51.99	52.355
266	1	51.948	52.385
266.1	1	51.927	52.38
266.2	1	51.906	52.34
266.3	1	51.885	52.3
266.4	1	51.864	52.26
266.5	1	51.822	52.22
266.6	1	51.801	52.18
266.7	1	51.78	52.14
266.8	1	51.739	52.1
266.9	1	51.718	52.06
267	1	51.718	52.02
267.1	1	51.697	51.995
267.2	1	51.697	51.985
267.3	1	51.697	51.975
267.4	1	51.697	51.965
267.5	1	51.697	51.955
267.6	1	51.697	51.945
267.7	1	51.676	51.935
267.8	1	51.676	51.925
267.9	1	51.655	51.915
268	1	51.634	51.905
268.1	1	51.613	51.89
268.2	1	51.613	51.87
268.3	1	51.571	51.85
268.4	1	51.529	51.83
268.5	1	51.508	51.81
268.6	1	51.508	51.79
268.7	1	51.487	51.77
268.8	1	51.445	51.75
268.9	1	51.445	51.73
269	1	51.403	51.71
269.1	1	51.403	51.69
269.2	1	51.383	51.67
269.3	1	51.362	51.65
269.4	1	51.341	51.63
269.5	1	51.32	51.61
269.6	1	51.32	51.59
269.7	1	51.299	51.57
269.8	1	51.299	51.55

269.9	1	51.299	51.53
270	1	51.299	51.51
270.1	1	51.299	51.505
270.2	1	51.299	51.515
270.3	1	51.299	51.525
270.4	1	51.32	51.535
270.5	1	51.32	51.545
270.6	1	51.32	51.555
270.7	1	51.32	51.565
270.8	1	51.32	51.575
270.9	1	51.32	51.585
271	1	51.341	51.595
271.1	1	51.341	51.61
271.2	1	51.341	51.63
271.3	1	51.362	51.65
271.4	1	51.362	51.67
271.5	1	51.383	51.69
271.6	1	51.383	51.71
271.7	1	51.403	51.73
271.8	1	51.403	51.75
271.9	1	51.403	51.77
272	1	51.424	51.79
272.1	1	51.445	51.815
272.2	1	51.445	51.845
272.3	1	51.466	51.875
272.4	1	51.487	51.905
272.5	1	51.529	51.935
272.6	1	51.55	51.965
272.7	1	51.592	51.995
272.8	1	51.634	52.025
272.9	1	51.676	52.055
273	1	51.718	52.085
273.1	1	51.76	52.12
273.2	1	51.801	52.16
273.3	1	51.822	52.2
273.4	1	51.864	52.24
273.5	1	51.885	52.28
273.6	1	51.906	52.32
273.7	1	51.906	52.36
273.8	1	51.927	52.4
273.9	1	51.948	52.44
274	1	51.969	52.48
274.1	1	52.011	52.525
274.2	1	52.074	52.575
274.3	1	52.116	52.625

274.4	1	52.158	52.675
274.5	1	52.22	52.725
274.6	1	52.262	52.775
274.7	1	52.325	52.825
274.8	1	52.367	52.875
274.9	1	52.409	52.925
275	1	52.472	52.975
275.1	1	52.514	53.025
275.2	1	52.556	53.075
275.3	1	52.597	53.125
275.4	1	52.639	53.175
275.5	1	52.681	53.225
275.6	1	52.744	53.275
275.7	1	52.786	53.325
275.8	1	52.828	53.375
275.9	1	52.87	53.425
276	1	52.912	53.475
276.1	1	52.954	53.525
276.2	1	52.995	53.575
276.3	1	53.037	53.625
276.4	1	53.079	53.675
276.5	1	53.121	53.725
276.6	1	53.142	53.775
276.7	1	53.184	53.825
276.8	1	53.226	53.875
276.9	1	53.268	53.925
277	1	53.268	53.975
277.1	1	53.352	54.045
277.2	1	53.414	54.135
277.3	1	53.456	54.225
277.4	1	53.519	54.315
277.5	1	53.561	54.405
277.6	1	53.624	54.495
277.7	1	53.666	54.585
277.8	1	53.729	54.675
277.9	1	53.729	54.765
278	1	53.812	54.855
278.1	1	53.812	54.925
278.2	1	53.917	54.975
278.3	1	53.917	55.025
278.4	1	53.98	55.075
278.5	1	54.085	55.125
278.6	1	54.127	55.175
278.7	1	54.189	55.225
278.8	1	54.189	55.275

278.9	1	54.252	55.325
279	1	54.399	55.375
279.1	1	54.462	55.41
279.2	1	54.462	55.43
279.3	1	54.504	55.45
279.4	1	54.566	55.47
279.5	1	54.692	55.49
279.6	1	54.755	55.51
279.7	1	54.755	55.53
279.8	1	54.818	55.55
279.9	1	54.881	55.57
280	1	55.006	55.59
280.1	1	55.006	55.62
280.2	1	55.069	55.66
280.3	1	55.132	55.7
280.4	1	55.195	55.74
280.5	1	55.32	55.78
280.6	1	55.32	55.82
280.7	1	55.383	55.86
280.8	1	55.425	55.9
280.9	1	55.53	55.94
281	1	55.53	55.98
281.1	1	55.572	56
281.2	1	55.593	56
281.3	1	55.635	56
281.4	1	55.698	56
281.5	1	55.698	56
281.6	1	55.718	56
281.7	1	55.76	56
281.8	1	55.781	56
281.9	1	55.802	56
282	1	55.802	56
282.1	1	55.823	55.99
282.2	1	55.823	55.97
282.3	1	55.823	55.95
282.4	1	55.823	55.93
282.5	1	55.802	55.91
282.6	1	55.76	55.89
282.7	1	55.718	55.87
282.8	1	55.656	55.85
282.9	1	55.593	55.83
283	1	55.53	55.81
283.1	1	55.467	55.77
283.2	1	55.404	55.71
283.3	1	55.32	55.65

283.4	1	55.279	55.59
283.5	1	55.216	55.53
283.6	1	55.132	55.47
283.7	1	55.069	55.41
283.8	1	54.985	55.35
283.9	1	54.923	55.29
284	1	54.839	55.23
284.1	1	54.755	55.165
284.2	1	54.671	55.095
284.3	1	54.587	55.025
284.4	1	54.504	54.955
284.5	1	54.42	54.885
284.6	1	54.315	54.815
284.7	1	54.231	54.745
284.8	1	54.127	54.675
284.9	1	54.043	54.605
285	1	53.938	54.535
285.1	1	53.854	54.455
285.2	1	53.77	54.365
285.3	1	53.687	54.275
285.4	1	53.582	54.185
285.5	1	53.498	54.095
285.6	1	53.414	54.005
285.7	1	53.31	53.915
285.8	1	53.226	53.825
285.9	1	53.142	53.735
286	1	53.058	53.645
286.1	1	52.974	53.545
286.2	1	52.891	53.435
286.3	1	52.891	53.325
286.4	1	52.702	53.215
286.5	1	52.639	53.105
286.6	1	52.556	52.995
286.7	1	52.493	52.885
286.8	1	52.43	52.775
286.9	1	52.367	52.665
287	1	52.304	52.555
287.1	1	52.262	52.45
287.2	1	52.262	52.35
287.3	1	52.178	52.25
287.4	1	52.178	52.15
287.5	1	52.158	52.05
287.6	1	52.158	51.95
287.7	1	52.158	51.85
287.8	1	52.158	51.75

287.9	1	52.178	51.65
288	1	52.178	51.55
288.1	1	52.178	51.5
288.2	1	52.178	51.5
288.3	1	52.199	51.5
288.4	1	52.199	51.5
288.5	1	52.199	51.5
288.6	1	52.199	51.5
288.7	1	52.178	51.5
288.8	1	52.116	51.5
288.9	1	52.074	51.5
289	1	52.074	51.5
289.1	1	52.032	51.5
289.2	1	51.906	51.5
289.3	1	51.843	51.5
289.4	1	51.843	51.5
289.5	1	51.78	51.5
289.6	1	51.718	51.5
289.7	1	51.571	51.5
289.8	1	51.508	51.5
289.9	1	51.508	51.5
290	1	51.424	51.5
290.1	1	51.362	51.48
290.2	1	51.215	51.44
290.3	1	51.215	51.4
290.4	1	51.152	51.36
290.5	1	51.11	51.32
290.6	1	51.089	51.28
290.7	1	51.068	51.24
290.8	1	51.026	51.2
290.9	1	51.005	51.16
291	1	50.985	51.12
291.1	1	50.985	51.05
291.2	1	50.901	50.95
291.3	1	50.838	50.85
291.4	1	50.775	50.75
291.5	1	50.691	50.65
291.6	1	50.607	50.55
291.7	1	50.524	50.45
291.8	1	50.44	50.35
291.9	1	50.335	50.25
292	1	50.23	50.15
292.1	1	50.147	50.095
292.2	1	50.084	50.085
292.3	1	50.021	50.075

292.4	1	49.958	50.065
292.5	1	49.916	50.055
292.6	1	49.895	50.045
292.7	1	49.853	50.035
292.8	1	49.853	50.025
292.9	1	49.832	50.015
293	1	49.791	50.005
293.1	1	49.77	50.005
293.2	1	49.749	50.015
293.3	1	49.728	50.025
293.4	1	49.707	50.035
293.5	1	49.686	50.045
293.6	1	49.665	50.055
293.7	1	49.644	50.065
293.8	1	49.623	50.075
293.9	1	49.623	50.085
294	1	49.602	50.095
294.1	1	49.602	50.095
294.2	1	49.602	50.085
294.3	1	49.581	50.075
294.4	1	49.56	50.065
294.5	1	49.56	50.055
294.6	1	49.518	50.045
294.7	1	49.497	50.035
294.8	1	49.455	50.025
294.9	1	49.434	50.015
295	1	49.393	50.005
295.1	1	49.372	49.98
295.2	1	49.351	49.94
295.3	1	49.33	49.9
295.4	1	49.309	49.86
295.5	1	49.288	49.82
295.6	1	49.267	49.78
295.7	1	49.246	49.74
295.8	1	49.225	49.7
295.9	1	49.225	49.66
296	1	49.183	49.62
296.1	1	49.162	49.595
296.2	1	49.141	49.585
296.3	1	49.099	49.575
296.4	1	49.099	49.565
296.5	1	49.057	49.555
296.6	1	49.036	49.545
296.7	1	49.036	49.535
296.8	1	49.036	49.525

296.9	1	49.036	49.515
297	1	49.057	49.505
297.1	1	49.057	49.5
297.2	1	49.078	49.5
297.3	1	49.078	49.5
297.4	1	49.099	49.5
297.5	1	49.12	49.5
297.6	1	49.141	49.5
297.7	1	49.141	49.5
297.8	1	49.141	49.5
297.9	1	49.183	49.5
298	1	49.204	49.5
298.1	1	49.204	49.5
298.2	1	49.204	49.5
298.3	1	49.225	49.5
298.4	1	49.204	49.5
298.5	1	49.225	49.5
298.6	1	49.225	49.5
298.7	1	49.225	49.5
298.8	1	49.246	49.5
298.9	1	49.267	49.5
299	1	49.267	49.5
299.1	1	49.267	49.48
299.2	1	49.246	49.44
299.3	1	49.225	49.4
299.4	1	49.204	49.36
299.5	1	49.204	49.32
299.6	1	49.162	49.28
299.7	1	49.141	49.24
299.8	1	49.057	49.2
299.9	1	49.057	49.16
300	1	48.974	49.12
300.1	1	48.89	49.075
300.2	1	48.806	49.025
300.3	1	48.722	48.975
300.4	1	48.638	48.925
300.5	1	48.534	48.875
300.6	1	48.45	48.825
300.7	1	48.366	48.775
300.8	1	48.282	48.725
300.9	1	48.199	48.675
301	1	48.115	48.625
301.1	1	48.031	48.575
301.2	1	47.947	48.525
301.3	1	47.863	48.475



301.4	1	47.78	48.425
301.5	1	47.696	48.375
301.6	1	47.612	48.325
301.7	1	47.507	48.275
301.8	1	47.424	48.225
301.9	1	47.361	48.175
302	1	47.298	48.125
302.1	1	47.235	48.055
302.2	1	47.193	47.965
302.3	1	47.151	47.875
302.4	1	47.109	47.785
302.5	1	47.047	47.695
302.6	1	47.005	47.605
302.7	1	46.942	47.515
302.8	1	46.879	47.425
302.9	1	46.795	47.335
303	1	46.711	47.245
303.1	1	46.628	47.145
303.2	1	46.544	47.035
303.3	1	46.46	46.925
303.4	1	46.376	46.815
303.5	1	46.292	46.705
303.6	1	46.209	46.595
303.7	1	46.104	46.485
303.8	1	46.02	46.375
303.9	1	45.915	46.265
304	1	45.832	46.155
304.1	1	45.832	46.045
304.2	1	45.643	45.935
304.3	1	45.538	45.825
304.4	1	45.455	45.715
304.5	1	45.371	45.605
304.6	1	45.266	45.495
304.7	1	45.182	45.385
304.8	1	45.078	45.275
304.9	1	44.994	45.165
305	1	44.889	45.055
305.1	1	44.805	44.94
305.2	1	44.721	44.82
305.3	1	44.617	44.7
305.4	1	44.533	44.58
305.5	1	44.428	44.46
305.6	1	44.428	44.34
305.7	1	44.261	44.22
305.8	1	44.156	44.1

305.9	1	44.072	43.98
306	1	44.072	43.86
306.1	1	43.884	43.74
306.2	1	43.8	43.62
306.3	1	43.695	43.5
306.4	1	43.59	43.38
306.5	1	43.59	43.26
306.6	1	43.297	43.14
306.7	1	43.129	43.02
306.8	1	42.941	42.9
306.9	1	42.941	42.78
307	1	42.752	42.66
307.1	1	42.375	42.545
307.2	1	42.187	42.435
307.3	1	42.019	42.325
307.4	1	42.019	42.215
307.5	1	41.831	42.105
307.6	1	41.496	41.995
307.7	1	41.37	41.885
307.8	1	41.37	41.775
307.9	1	41.244	41.665
308	1	41.035	41.555
308.1	1	40.951	41.44
308.2	1	40.951	41.32
308.3	1	40.846	41.2
308.4	1	40.762	41.08
308.5	1	40.574	40.96
308.6	1	40.469	40.84
308.7	1	40.469	40.72
308.8	1	40.344	40.6
308.9	1	40.218	40.48
309	1	39.904	40.36
309.1	1	39.904	40.21
309.2	1	39.736	40.03
309.3	1	39.589	39.85
309.4	1	39.464	39.67
309.5	1	39.317	39.49
309.6	1	39.129	39.31
309.7	1	38.94	39.13
309.8	1	38.752	38.95
309.9	1	38.354	38.77
310	1	38.354	38.59
310.1	1	38.165	38.425
310.2	1	38.018	38.275
310.3	1	37.851	38.125

310.4	1	37.704	37.975
310.5	1	37.558	37.825
310.6	1	37.39	37.675
310.7	1	37.243	37.525
310.8	1	37.097	37.375
310.9	1	36.929	37.225
311	1	36.783	37.075
311.1	1	36.636	36.91
311.2	1	36.51	36.73
311.3	1	36.364	36.55
311.4	1	36.217	36.37
311.5	1	36.091	36.19
311.6	1	35.945	36.01
311.7	1	35.798	35.83
311.8	1	35.651	35.65
311.9	1	35.526	35.47
312	1	35.379	35.29
312.1	1	35.233	35.13
312.2	1	35.086	34.99
312.3	1	34.939	34.85
312.4	1	34.814	34.71
312.5	1	34.667	34.57
312.6	1	34.52	34.43
312.7	1	34.374	34.29
312.8	1	34.227	34.15
312.9	1	34.08	34.01
313	1	33.955	33.87
313.1	1	33.808	33.735
313.2	1	33.703	33.605
313.3	1	33.578	33.475
313.4	1	33.452	33.345
313.5	1	33.347	33.215
313.6	1	33.243	33.085
313.7	1	33.138	32.955
313.8	1	33.054	32.825
313.9	1	32.949	32.695
314	1	32.824	32.565
314.1	1	32.719	32.45
314.2	1	32.593	32.35
314.3	1	32.468	32.25
314.4	1	32.342	32.15
314.5	1	32.237	32.05
314.6	1	32.09	31.95
314.7	1	31.965	31.85
314.8	1	31.965	31.75

314.9	1	31.734	31.65
315	1	31.609	31.55
315.1	1	31.483	31.455
315.2	1	31.378	31.365
315.3	1	31.274	31.275
315.4	1	31.169	31.185
315.5	1	31.064	31.095
315.6	1	30.98	31.005
315.7	1	30.98	30.915
315.8	1	30.792	30.825
315.9	1	30.687	30.735
316	1	30.582	30.645
316.1	1	30.582	30.595
316.2	1	30.499	30.585
316.3	1	30.352	30.575
316.4	1	30.289	30.565
316.5	1	30.289	30.555
316.6	1	30.226	30.545
316.7	1	30.101	30.535
316.8	1	30.059	30.525
316.9	1	30.017	30.515
317	1	30.017	30.505
317.1	1	30.017	30.475
317.2	1	29.912	30.425
317.3	1	29.87	30.375
317.4	1	29.87	30.325
317.5	1	29.849	30.275
317.6	1	29.786	30.225
317.7	1	29.682	30.175
317.8	1	29.619	30.125
317.9	1	29.619	30.075
318	1	29.556	30.025
318.1	1	29.472	29.95
318.2	1	29.305	29.85
318.3	1	29.305	29.75
318.4	1	29.2	29.65
318.5	1	29.053	29.55
318.6	1	28.907	29.45
318.7	1	28.613	29.35
318.8	1	28.613	29.25
318.9	1	28.467	29.15
319	1	28.341	29.05
319.1	1	28.132	28.925
319.2	1	28.132	28.775
319.3	1	28.006	28.625

319.4	1	27.901	28.475
319.5	1	27.775	28.325
319.6	1	27.65	28.175
319.7	1	27.503	28.025
319.8	1	27.377	27.875
319.9	1	27.252	27.725
320	1	27.126	27.575
320.1	1	26.979	27.365
320.2	1	26.833	27.095
320.3	1	26.707	26.825
320.4	1	26.561	26.555
320.5	1	26.414	26.285
320.6	1	26.225	26.015
320.7	1	26.016	25.745
320.8	1	25.723	25.475
320.9	1	25.367	25.205
321	1	25.01	24.935
321.1	1	24.612	24.635
321.2	1	24.235	24.305
321.3	1	23.837	23.975
321.4	1	23.439	23.645
321.5	1	23.062	23.315
321.6	1	22.748	22.985
321.7	1	22.518	22.655
321.8	1	22.329	22.325
321.9	1	22.141	21.995
322	1	21.952	21.665
322.1	1	21.785	21.43
322.2	1	21.596	21.29
322.3	1	21.408	21.15
322.4	1	21.24	21.01
322.5	1	21.072	20.87
322.6	1	20.884	20.73
322.7	1	20.695	20.59
322.8	1	20.528	20.45
322.9	1	20.381	20.31
323	1	20.256	20.17
323.1	1	20.13	20.05
323.2	1	20.004	19.95
323.3	1	19.879	19.85
323.4	1	19.753	19.75
323.5	1	19.627	19.65
323.6	1	19.501	19.55
323.7	1	19.376	19.45
323.8	1	19.271	19.35

323.9	1	19.145	19.25
324	1	19.02	19.15
324.1	1	18.894	19.07
324.2	1	18.768	19.01
324.3	1	18.664	18.95
324.4	1	18.559	18.89
324.5	1	18.433	18.83
324.6	1	18.328	18.77
324.7	1	18.224	18.71
324.8	1	18.224	18.65
324.9	1	18.056	18.59
325	1	18.014	18.53
325.1	1	17.951	18.425
325.2	1	17.951	18.275
325.3	1	17.91	18.125
325.4	1	17.805	17.975
325.5	1	17.742	17.825
325.6	1	17.679	17.675
325.7	1	17.679	17.525
325.8	1	17.491	17.375
325.9	1	17.407	17.225
326	1	17.323	17.075
326.1	1	17.323	16.925
326.2	1	17.239	16.775
326.3	1	17.093	16.625
326.4	1	17.009	16.475
326.5	1	17.009	16.325
326.6	1	16.925	16.175
326.7	1	16.82	16.025
326.8	1	16.59	15.875
326.9	1	16.464	15.725
327	1	16.464	15.575
327.1	1	16.297	15.35
327.2	1	16.087	15.05
327.3	1	15.563	14.75
327.4	1	15.563	14.45
327.5	1	15.249	14.15
327.6	1	14.914	13.85
327.7	1	14.097	13.55
327.8	1	14.097	13.25
327.9	1	13.657	12.95
328	1	13.176	12.65
328.1	1	12.757	12.415
328.2	1	11.961	12.245
328.3	1	11.961	12.075

328.4	1	11.584	11.905
328.5	1	11.248	11.735
328.6	1	10.934	11.565
328.7	1	10.599	11.395
328.8	1	10.285	11.225
328.9	1	9.992	11.055
329	1	9.74	10.885
329.1	1	9.531	10.66
329.2	1	9.321	10.38
329.3	1	9.133	10.1
329.4	1	8.965	9.82
329.5	1	8.777	9.54
329.6	1	8.588	9.26
329.7	1	8.4	8.98
329.8	1	8.232	8.7
329.9	1	8.065	8.42
330	1	7.897	8.14
330.1	1	7.897	7.835
330.2	1	7.394	7.505
330.3	1	7.059	7.175
330.4	1	6.724	6.845
330.5	1	6.368	6.515
330.6	1	6.012	6.185
330.7	1	5.656	5.855
330.8	1	5.279	5.525
330.9	1	4.922	5.195
331	1	4.566	4.865
331.1	1	4.189	4.535
331.2	1	3.833	4.205
331.3	1	3.477	3.875
331.4	1	3.121	3.545
331.5	1	2.744	3.215
331.6	1	2.409	2.885
331.7	1	2.053	2.555
331.8	1	1.718	2.225
331.9	1	1.382	1.895
332	1	1.005	1.565
332.1	1	0.649	1.33
332.2	1	0.314	1.19
332.3	1	0.189	1.05
332.4	1	0.189	0.91
332.5	1	0.147	0.77
332.6	1	0.084	0.63
332.7	1	0.084	0.49
332.8	1	0.105	0.35

332.9	1	0.042	0.21
333	1	0.042	0.07
333.1	1	0.063	0
333.2	1	0.042	0
333.3	1	0.021	0
333.4	1	0.042	0
333.5	1	0.042	0
333.6	1	0.021	0
333.7	1	0.021	0
333.8	1	0	0
333.9	1	0	0
334	1	0	0
334.1	1	0	0
334.2	1	0	0
334.3	1	0	0
334.4	1	0	0
334.5	1	0	0
334.6	1	0	0
334.7	1	0	0
334.8	1	0	0
334.9	1	0	0
335	1	0	0
335.1	1	0	0
335.2	1	0	0
335.3	1	0	0
335.4	1	0	0
335.5	1	0	0
335.6	1	0	0
335.7	1	0	0
335.8	1	0	0
335.9	1	0	0
336	1	0	0
336.1	1	0	0
336.2	1	0	0
336.3	1	0	0
336.4	1	0	0
336.5	1	0	0
336.6	1	0	0
336.7	1	0	0
336.8	1	0	0
336.9	1	0	0
337	1	0	0
337.1	1	0	0
337.2	1	0	0
337.3	1	0	0



337.4	1	0	0
337.5	1	0	0
337.6	1	0	0
337.7	1	0	0
337.8	1	0	0
337.9	1	0	0
338	1	0	0
338.1	1	0	0
338.2	1	0	0
338.3	1	0	0
338.4	1	0	0
338.5	1	0	0
338.6	1	0	0
338.7	1	0	0
338.8	1	0	0
338.9	1	0	0
339	1	0	0
339.1	1	0	0
339.2	1	0	0
339.3	1	0	0
339.4	1	0	0
339.5	1	0	0
339.6	1	0	0
339.7	1	0	0
339.8	1	0	0
339.9	1	0	0
340	1	0	0
340.1	1	0	0
340.2	1	0	0
340.3	1	0	0
340.4	1	0	0
340.5	1	0	0
340.6	1	0	0
340.7	1	0	0
340.8	1	0	0
340.9	1	0	0
341	1	-0.021	0
341.1	1	0	0
341.2	1	0	0
341.3	1	0	0
341.4	1	0	0
341.5	1	-0.021	0
341.6	1	0	0
341.7	1	-0.021	0
341.8	1	0	0

341.9	1	0	0
342	1	-0.021	0
342.1	1	-0.021	0
342.2	1	0	0
342.3	1	0	0
342.4	1	0	0
342.5	1	0	0
342.6	1	0	0
342.7	1	0	0
342.8	1	0	0
342.9	1	0	0
343	1	0	0
343.1	1	0	0
343.2	1	0	0
343.3	1	0	0
343.4	1	0	0
343.5	1	0	0
343.6	1	0	0
343.7	1	0	0
343.8	1	0	0
343.9	1	0	0
344	1	0	0
344.1	1	0	0
344.2	1	0	0
344.3	1	0	0
344.4	1	0	0
344.5	1	0	0
344.6	1	0	0
344.7	1	-0.021	0
344.8	1	0	0
344.9	1	0	0
345	1	0	0
345.1	1	0	0
345.2	1	0	0
345.3	1	0	0
345.4	1	-0.021	0
345.5	1	-0.021	0
345.6	1	0	0
345.7	1	0	0
345.8	1	-0.021	0
345.9	1	-0.021	0
346	1	0	0
346.1	1	0	0.05
346.2	1	0	0.15
346.3	1	0	0.25

346.4	1	0.042	0.35
346.5	1	0.063	0.45
346.6	1	0.105	0.55
346.7	1	0.105	0.65
346.8	1	0.147	0.75
346.9	1	0.189	0.85
347	1	0.272	0.95
347.1	1	0.754	1.165
347.2	1	0.754	1.495
347.3	1	0.984	1.825
347.4	1	1.215	2.155
347.5	1	1.445	2.485
347.6	1	1.655	2.815
347.7	1	1.906	3.145
347.8	1	2.178	3.475
347.9	1	2.43	3.805
348	1	2.723	4.135
348.1	1	2.995	4.465
348.2	1	3.31	4.795
348.3	1	3.624	5.125
348.4	1	3.98	5.455
348.5	1	4.378	5.785
348.6	1	4.818	6.115
348.7	1	5.237	6.445
348.8	1	5.677	6.775
348.9	1	6.116	7.105
349	1	6.577	7.435
349.1	1	7.017	7.765
349.2	1	7.478	8.095
349.3	1	7.918	8.425
349.4	1	8.358	8.755
349.5	1	8.777	9.085
349.6	1	9.133	9.415
349.7	1	9.426	9.745
349.8	1	9.719	10.075
349.9	1	9.992	10.405
350	1	10.285	10.735
350.1	1	10.578	11.065
350.2	1	10.871	11.395
350.3	1	11.186	11.725
350.4	1	11.479	12.055
350.5	1	11.793	12.385
350.6	1	12.107	12.715
350.7	1	12.401	13.045
350.8	1	12.715	13.375

350.9	1	13.029	13.705
351	1	13.343	14.035
351.1	1	13.657	14.355
351.2	1	13.972	14.665
351.3	1	14.286	14.975
351.4	1	14.6	15.285
351.5	1	14.935	15.595
351.6	1	15.291	15.905
351.7	1	15.626	16.215
351.8	1	15.941	16.525
351.9	1	16.255	16.835
352	1	16.569	17.145
352.1	1	16.841	17.435
352.2	1	17.093	17.705
352.3	1	17.344	17.975
352.4	1	17.595	18.245
352.5	1	17.826	18.515
352.6	1	18.056	18.785
352.7	1	18.287	19.055
352.8	1	18.287	19.325
352.9	1	18.664	19.595
353	1	18.831	19.865
353.1	1	18.999	20.125
353.2	1	19.187	20.375
353.3	1	19.187	20.625
353.4	1	19.627	20.875
353.5	1	19.879	21.125
353.6	1	20.13	21.375
353.7	1	20.13	21.625
353.8	1	20.381	21.875
353.9	1	20.884	22.125
354	1	21.156	22.375
354.1	1	21.408	22.56
354.2	1	21.408	22.68
354.3	1	21.91	22.8
354.4	1	22.183	22.92
354.5	1	22.434	23.04
354.6	1	22.434	23.16
354.7	1	22.706	23.28
354.8	1	23.167	23.4
354.9	1	23.398	23.52
355	1	23.398	23.64
355.1	1	23.649	23.775
355.2	1	23.879	23.925
355.3	1	24.361	24.075

355.4	1	24.361	24.225
355.5	1	24.592	24.375
355.6	1	24.822	24.525
355.7	1	25.262	24.675
355.8	1	25.45	24.825
355.9	1	25.45	24.975
356	1	25.597	25.125
356.1	1	25.597	25.27
356.2	1	25.995	25.41
356.3	1	25.995	25.55
356.4	1	26.121	25.69
356.5	1	26.225	25.83
356.6	1	26.33	25.97
356.7	1	26.414	26.11
356.8	1	26.498	26.25
356.9	1	26.602	26.39
357	1	26.686	26.53
357.1	1	26.791	26.675
357.2	1	26.917	26.825
357.3	1	27.063	26.975
357.4	1	27.21	27.125
357.5	1	27.357	27.275
357.6	1	27.482	27.425
357.7	1	27.608	27.575
357.8	1	27.734	27.725
357.9	1	27.859	27.875
358	1	27.985	28.025
358.1	1	28.09	28.195
358.2	1	28.236	28.385
358.3	1	28.362	28.575
358.4	1	28.488	28.765
358.5	1	28.613	28.955
358.6	1	28.739	29.145
358.7	1	28.886	29.335
358.8	1	29.011	29.525
358.9	1	29.116	29.715
359	1	29.242	29.905
359.1	1	29.367	30.04
359.2	1	29.493	30.12
359.3	1	29.619	30.2
359.4	1	29.744	30.28
359.5	1	29.87	30.36
359.6	1	29.975	30.44
359.7	1	30.101	30.52
359.8	1	30.247	30.6

359.9	1	30.394	30.68
360	1	30.54	30.76
360.1	1	30.666	30.84
360.2	1	30.771	30.92
360.3	1	30.876	31
360.4	1	31.001	31.08
360.5	1	31.106	31.16
360.6	1	31.211	31.24
360.7	1	31.315	31.32
360.8	1	31.42	31.4
360.9	1	31.546	31.48
361	1	31.651	31.56
361.1	1	31.776	31.625
361.2	1	31.881	31.675
361.3	1	31.986	31.725
361.4	1	32.111	31.775
361.5	1	32.111	31.825
361.6	1	32.321	31.875
361.7	1	32.426	31.925
361.8	1	32.509	31.975
361.9	1	32.593	32.025
362	1	32.677	32.075
362.1	1	32.761	32.135
362.2	1	32.845	32.205
362.3	1	32.907	32.275
362.4	1	32.907	32.345
362.5	1	33.075	32.415
362.6	1	33.138	32.485
362.7	1	33.201	32.555
362.8	1	33.201	32.625
362.9	1	33.326	32.695
363	1	33.368	32.765
363.1	1	33.431	32.84
363.2	1	33.473	32.92
363.3	1	33.473	33
363.4	1	33.557	33.08
363.5	1	33.599	33.16
363.6	1	33.62	33.24
363.7	1	33.62	33.32
363.8	1	33.662	33.4
363.9	1	33.724	33.48
364	1	33.766	33.56
364.1	1	33.787	33.645
364.2	1	33.787	33.735
364.3	1	33.829	33.825

364.4	1	33.913	33.915
364.5	1	33.955	34.005
364.6	1	33.955	34.095
364.7	1	33.997	34.185
364.8	1	34.039	34.275
364.9	1	34.101	34.365
365	1	34.122	34.455
365.1	1	34.122	34.505
365.2	1	34.143	34.515
365.3	1	34.143	34.526
365.4	1	34.206	34.535
365.5	1	34.206	34.545
365.6	1	34.269	34.555
365.7	1	34.332	34.565
365.8	1	34.437	34.575
365.9	1	34.437	34.585
366	1	34.478	34.595
366.1	1	34.52	34.615
366.2	1	34.562	34.645
366.3	1	34.583	34.675
366.4	1	34.604	34.705
366.5	1	34.625	34.735
366.6	1	34.625	34.765
366.7	1	34.625	34.795
366.8	1	34.625	34.825
366.9	1	34.583	34.855
367	1	34.562	34.885
367.1	1	34.52	34.895
367.2	1	34.457	34.885
367.3	1	34.416	34.875
367.4	1	34.353	34.865
367.5	1	34.29	34.855
367.6	1	34.227	34.845
367.7	1	34.164	34.835
367.8	1	34.122	34.825
367.9	1	34.08	34.815
368	1	34.08	34.805
368.1	1	34.08	34.785
368.2	1	34.08	34.755
368.3	1	34.101	34.725
368.4	1	34.101	34.695
368.5	1	34.122	34.665
368.6	1	34.143	34.635
368.7	1	34.164	34.605
368.8	1	34.185	34.575

368.9	1	34.206	34.545
369	1	34.206	34.515
369.1	1	34.29	34.51
369.2	1	34.332	34.53
369.3	1	34.374	34.55
369.4	1	34.416	34.57
369.5	1	34.457	34.59
369.6	1	34.499	34.61
369.7	1	34.541	34.63
369.8	1	34.583	34.65
369.9	1	34.625	34.67
370	1	34.667	34.69
370.1	1	34.709	34.74
370.2	1	34.772	34.82
370.3	1	34.835	34.9
370.4	1	34.918	34.98
370.5	1	34.981	35.06
370.6	1	35.065	35.14
370.7	1	35.128	35.22
370.8	1	35.212	35.3
370.9	1	35.295	35.38
371	1	35.358	35.46
371.1	1	35.358	35.525
371.2	1	35.526	35.575
371.3	1	35.589	35.625
371.4	1	35.631	35.675
371.5	1	35.693	35.725
371.6	1	35.735	35.775
371.7	1	35.777	35.825
371.8	1	35.819	35.875
371.9	1	35.861	35.925
372	1	35.861	35.975
372.1	1	35.945	36
372.2	1	35.987	36
372.3	1	36.028	36
372.4	1	36.049	36
372.5	1	36.049	36
372.6	1	36.112	36
372.7	1	36.133	36
372.8	1	36.154	36
372.9	1	36.154	36
373	1	36.196	36
373.1	1	36.217	36
373.2	1	36.217	36
373.3	1	36.217	36



373.4	1	36.217	36
373.5	1	36.217	36
373.6	1	36.217	36
373.7	1	36.217	36
373.8	1	36.217	36
373.9	1	36.217	36
374	1	36.217	36
374.1	1	36.217	36
374.2	1	36.217	36
374.3	1	36.217	36
374.4	1	36.217	36
374.5	1	36.217	36
374.6	1	36.217	36
374.7	1	36.217	36
374.8	1	36.217	36
374.9	1	36.217	36
375	1	36.217	36
375.1	1	36.217	36
375.2	1	36.217	36
375.3	1	36.238	36
375.4	1	36.238	36
375.5	1	36.238	36
375.6	1	36.238	36
375.7	1	36.238	36
375.8	1	36.238	36
375.9	1	36.238	36
376	1	36.238	36
376.1	1	36.238	36
376.2	1	36.238	36
376.3	1	36.259	36
376.4	1	36.259	36
376.5	1	36.259	36
376.6	1	36.259	36
376.7	1	36.259	36
376.8	1	36.238	36
376.9	1	36.217	36
377	1	36.196	36
377.1	1	36.175	36.005
377.2	1	36.154	36.015
377.3	1	36.133	36.025
377.4	1	36.112	36.035
377.5	1	36.07	36.045
377.6	1	36.049	36.055
377.7	1	36.028	36.065
377.8	1	36.008	36.075

377.9	1	35.987	36.085
378	1	35.966	36.095
378.1	1	35.945	36.115
378.2	1	35.924	36.145
378.3	1	35.924	36.175
378.4	1	35.924	36.205
378.5	1	35.966	36.235
378.6	1	36.028	36.265
378.7	1	36.091	36.295
378.8	1	36.154	36.325
378.9	1	36.217	36.355
379	1	36.301	36.385
379.1	1	36.364	36.405
379.2	1	36.426	36.415
379.3	1	36.489	36.425
379.4	1	36.552	36.435
379.5	1	36.594	36.445
379.6	1	36.615	36.455
379.7	1	36.636	36.465
379.8	1	36.615	36.475
379.9	1	36.594	36.485
380	1	36.552	36.495
380.1	1	36.51	36.495
380.2	1	36.468	36.485
380.3	1	36.426	36.475
380.4	1	36.385	36.465
380.5	1	36.343	36.455
380.6	1	36.343	36.445
380.7	1	36.238	36.435
380.8	1	36.196	36.425
380.9	1	36.133	36.415
381	1	36.07	36.405
381.1	1	36.028	36.38
381.2	1	35.987	36.34
381.3	1	35.966	36.3
381.4	1	35.945	36.26
381.5	1	35.945	36.22
381.6	1	35.903	36.18
381.7	1	35.882	36.14
381.8	1	35.861	36.1
381.9	1	35.861	36.06
382	1	35.84	36.02
382.1	1	35.798	35.955
382.2	1	35.777	35.865
382.3	1	35.756	35.775

382.4	1	35.756	35.685
382.5	1	35.651	35.595
382.6	1	35.568	35.505
382.7	1	35.505	35.415
382.8	1	35.505	35.325
382.9	1	35.442	35.235
383	1	35.358	35.145
383.1	1	35.191	35.05
383.2	1	35.107	34.95
383.3	1	35.107	34.85
383.4	1	35.044	34.75
383.5	1	34.876	34.65
383.6	1	34.793	34.55
383.7	1	34.793	34.45
383.8	1	34.709	34.35
383.9	1	34.625	34.25
384	1	34.437	34.15
384.1	1	34.437	34.07
384.2	1	34.353	34.01
384.3	1	34.269	33.95
384.4	1	34.185	33.89
384.5	1	33.997	33.83
384.6	1	33.997	33.77
384.7	1	33.913	33.71
384.8	1	33.829	33.65
384.9	1	33.724	33.59
385	1	33.641	33.53
385.1	1	33.557	33.395
385.2	1	33.473	33.185
385.3	1	33.389	32.975
385.4	1	33.054	32.765
385.5	1	33.054	32.555
385.6	1	32.614	32.345
385.7	1	32.111	32.135
385.8	1	31.651	31.925
385.9	1	31.295	31.715
386	1	31.043	31.505
386.1	1	30.813	31.28
386.2	1	30.582	31.04
386.3	1	30.352	30.8
386.4	1	30.122	30.56
386.5	1	29.87	30.32
386.6	1	29.556	30.08
386.7	1	29.221	29.84
386.8	1	28.928	29.6

386.9	1	28.676	29.36
387	1	28.446	29.12
387.1	1	28.236	28.835
387.2	1	28.027	28.505
387.3	1	27.838	28.175
387.4	1	27.65	27.845
387.5	1	27.461	27.515
387.6	1	27.273	27.185
387.7	1	27.084	26.855
387.8	1	26.875	26.525
387.9	1	26.665	26.195
388	1	26.477	25.865
388.1	1	26.267	25.565
388.2	1	26.079	25.295
388.3	1	25.869	25.025
388.4	1	25.66	24.755
388.5	1	25.45	24.485
388.6	1	25.157	24.215
388.7	1	24.843	23.945
388.8	1	24.508	23.675
388.9	1	24.11	23.405
389	1	23.733	23.135
389.1	1	23.335	22.865
389.2	1	22.916	22.595
389.3	1	22.518	22.325
389.4	1	22.12	22.055
389.5	1	21.701	21.785
389.6	1	21.303	21.515
389.7	1	20.905	21.245
389.8	1	20.528	20.975
389.9	1	20.13	20.689
390	1	19.753	20.435
390.1	1	19.355	20.16
390.2	1	19.355	19.88
390.3	1	18.622	19.6
390.4	1	18.287	19.32
390.5	1	17.951	19.04
390.6	1	17.951	18.76
390.7	1	17.365	18.48
390.8	1	17.114	18.2
390.9	1	16.904	17.92
391	1	16.716	17.64
391.1	1	16.716	17.35
391.2	1	16.359	17.05
391.3	1	16.192	16.75

391.4	1	16.003	16.45
391.5	1	16.003	16.15
391.6	1	15.857	15.85
391.7	1	15.522	15.55
391.8	1	15.354	15.25
391.9	1	15.186	14.95
392	1	15.186	14.65
392.1	1	14.998	14.375
392.2	1	14.453	14.125
392.3	1	14.097	13.875
392.4	1	14.097	13.625
392.5	1	13.72	13.375
392.6	1	12.945	13.125
392.7	1	12.568	12.875
392.8	1	12.568	12.625
392.9	1	12.191	12.375
393	1	11.835	12.125
393.1	1	11.123	11.835
393.2	1	10.767	11.505
393.3	1	10.767	11.175
393.4	1	10.411	10.845
393.5	1	10.075	10.515
393.6	1	9.405	10.185
393.7	1	9.405	9.855
393.8	1	9.091	9.525
393.9	1	8.798	9.195
394	1	8.504	8.865
394.1	1	7.876	8.535
394.2	1	7.876	8.205
394.3	1	7.562	7.875
394.4	1	7.269	7.545
394.5	1	6.996	7.215
394.6	1	6.724	6.885
394.7	1	6.452	6.555
394.8	1	6.179	6.225
394.9	1	5.907	5.895
395	1	5.907	5.565
395.1	1	5.32	5.235
395.2	1	5.048	4.905
395.3	1	4.776	4.575
395.4	1	4.483	4.245
395.5	1	4.168	3.915
395.6	1	3.833	3.585
395.7	1	3.498	3.255
395.8	1	3.079	2.925

395.9	1	2.639	2.595
396	1	2.178	2.265
396.1	1	1.718	1.995
396.2	1	1.236	1.785
396.3	1	0.754	1.575
396.4	1	0.356	1.365
396.5	1	0.23	1.155
396.6	1	0.209	0.945
396.7	1	0.147	0.735
396.8	1	0.105	0.525
396.9	1	0.126	0.315
397	1	0.105	0.105
397.1	1	0.063	0
397.2	1	0.063	0
397.3	1	0.084	0
397.4	1	0.042	0
397.5	1	0.021	0
397.6	1	0.042	0
397.7	1	0.021	0
397.8	1	0.021	0
397.9	1	0.021	0
398	1	0.021	0
398.1	1	0	0
398.2	1	0.021	0
398.3	1	0	0
398.4	1	0	0
398.5	1	0.021	0
398.6	1	0	0
398.7	1	0	0
398.8	1	0	0
398.9	1	0	0
399	1	0	0
399.1	1	0	0
399.2	1	0	0
399.3	1	0	0
399.4	1	0	0
399.5	1	0	0
399.6	1	0	0
399.7	1	0	0
399.8	1	0	0
399.9	1	0	0
400	1	0	0
400.1	1	0	0
400.2	1	0	0
400.3	1	0	0

400.4	1	0	0
400.5	1	0	0
400.6	1	0	0
400.7	1	0	0
400.8	1	0	0
400.9	1	0	0
401	1	0	0
401.1	1	0	0
401.2	1	0	0
401.3	1	0	0
401.4	1	0	0
401.5	1	0	0
401.6	1	0.021	0
401.7	1	0.021	0
401.8	1	0.042	0
401.9	1	0.084	0
402	1	0.126	0
402.1	1	0.126	0.13
402.2	1	0.189	0.39
402.3	1	0.335	0.65
402.4	1	0.733	0.91
402.5	1	0.733	1.17
402.6	1	0.922	1.43
402.7	1	1.131	1.69
402.8	1	1.529	1.95
402.9	1	1.739	2.21
403	1	1.739	2.47
403.1	1	1.969	2.765
403.2	1	2.22	3.095
403.3	1	2.702	3.425
403.4	1	2.702	3.755
403.5	1	2.933	4.085
403.6	1	3.163	4.415
403.7	1	3.435	4.745
403.8	1	4.022	5.075
403.9	1	4.022	5.405
404	1	4.336	5.735
404.1	1	4.65	6.065
404.2	1	4.964	6.395
404.3	1	5.3	6.725
404.4	1	5.656	7.055
404.5	1	6.054	7.385
404.6	1	6.431	7.715
404.7	1	6.829	8.045
404.8	1	7.206	8.375

404.9	1	7.541	8.705
405	1	7.876	9.035
405.1	1	8.211	9.365
405.2	1	8.483	9.695
405.3	1	8.798	10.025
405.4	1	9.112	10.355
405.5	1	9.447	10.685
405.6	1	9.803	11.015
405.7	1	10.159	11.345
405.8	1	10.515	11.675
405.9	1	10.892	12.005
406	1	11.248	12.335
406.1	1	11.625	12.665
406.2	1	12.023	12.995
406.3	1	12.421	13.325
406.4	1	12.861	13.655
406.5	1	13.301	13.985
406.6	1	13.741	14.315
406.7	1	14.181	14.645
406.8	1	14.642	14.975
406.9	1	15.082	15.305
407	1	15.543	15.635
407.1	1	16.003	15.965
407.2	1	16.464	16.295
407.3	1	16.925	16.625
407.4	1	17.386	16.955
407.5	1	17.826	17.285
407.6	1	18.287	17.615
407.7	1	18.726	17.945
407.8	1	19.103	18.275
407.9	1	19.439	18.605
408	1	19.439	18.935
408.1	1	20.067	19.265
408.2	1	20.339	19.595
408.3	1	20.612	19.925
408.4	1	20.884	20.255
408.5	1	21.177	20.585
408.6	1	21.47	20.915
408.7	1	21.764	21.245
408.8	1	22.036	21.575
408.9	1	22.329	21.905
409	1	22.623	22.235
409.1	1	22.895	22.53
409.2	1	23.167	22.79
409.3	1	23.439	23.05



409.4	1	23.691	23.31
409.5	1	23.942	23.57
409.6	1	24.194	23.83
409.7	1	24.445	24.09
409.8	1	24.696	24.35
409.9	1	24.969	24.61
410	1	24.969	24.87
410.1	1	25.492	25.03
410.2	1	25.744	25.09
410.3	1	26.016	25.15
410.4	1	26.016	25.21
410.5	1	26.204	25.27
410.6	1	26.309	25.33
410.7	1	26.351	25.39
410.8	1	26.393	25.45
410.9	1	26.393	25.51
411	1	26.435	25.57
411.1	1	26.623	25.695
411.2	1	26.749	25.885
411.3	1	26.749	26.075
411.4	1	26.896	26.265
411.5	1	27.189	26.455
411.6	1	27.336	26.645
411.7	1	27.336	26.835
411.8	1	27.461	27.025
411.9	1	27.608	27.215
412	1	27.859	27.405
412.1	1	28.006	27.575
412.2	1	28.006	27.725
412.3	1	28.132	27.875
412.4	1	28.257	28.025
412.5	1	28.53	28.175
412.6	1	28.53	28.325
412.7	1	28.676	28.475
412.8	1	28.802	28.625
412.9	1	29.053	28.775
413	1	29.053	28.925
413.1	1	29.2	29.05
413.2	1	29.326	29.15
413.3	1	29.451	29.25
413.4	1	29.703	29.35
413.5	1	29.703	29.45
413.6	1	29.807	29.55
413.7	1	29.933	29.65
413.8	1	30.059	29.75

413.9	1	30.163	29.85
414	1	30.268	29.95
414.1	1	30.352	30.005
414.2	1	30.394	30.015
414.3	1	30.436	30.025
414.4	1	30.457	30.035
414.5	1	30.436	30.045
414.6	1	30.415	30.055
414.7	1	30.415	30.065
414.8	1	30.394	30.075
414.9	1	30.394	30.085
415	1	30.373	30.095
415.1	1	30.331	30.095
415.2	1	30.268	30.085
415.3	1	30.205	30.075
415.4	1	30.142	30.065
415.5	1	30.08	30.055
415.6	1	30.038	30.045
415.7	1	29.996	30.035
415.8	1	29.975	30.025
415.9	1	29.975	30.015
416	1	29.975	30.005
416.1	1	29.996	29.985
416.2	1	29.996	29.955
416.3	1	30.017	29.925
416.4	1	30.017	29.895
416.5	1	30.038	29.865
416.6	1	30.038	29.835
416.7	1	30.059	29.805
416.8	1	30.038	29.775
416.9	1	30.038	29.745
417	1	29.996	29.715
417.1	1	29.933	29.68
417.2	1	29.849	29.64
417.3	1	29.765	29.6
417.4	1	29.682	29.56
417.5	1	29.598	29.52
417.6	1	29.493	29.48
417.7	1	29.388	29.44
417.8	1	29.305	29.4
417.9	1	29.2	29.36
418	1	29.095	29.32
418.1	1	28.99	29.275
418.2	1	28.907	29.225
418.3	1	28.802	29.175

418.4	1	28.718	29.125
418.5	1	28.634	29.075
418.6	1	28.571	29.025
418.7	1	28.571	28.975
418.8	1	28.467	28.925
418.9	1	28.404	28.875
419	1	28.32	28.825
419.1	1	28.32	28.76
419.2	1	28.173	28.68
419.3	1	28.09	28.6
419.4	1	28.006	28.52
419.5	1	27.922	28.44
419.6	1	27.922	28.36
419.7	1	27.566	28.28
419.8	1	27.294	28.2
419.9	1	27	28.12
420	1	27	28.04
420.1	1	26.686	27.85
420.2	1	26.058	27.55
420.3	1	25.723	27.25
420.4	1	25.388	26.95
420.5	1	25.388	26.65
420.6	1	25.073	26.35
420.7	1	24.55	26.05
420.8	1	24.319	25.75
420.9	1	24.319	25.45
421	1	24.319	25.15
421.1	1	23.565	24.835
421.2	1	23.251	24.505
421.3	1	23.251	24.175
421.4	1	22.874	23.845
421.5	1	22.455	23.515
421.6	1	21.575	23.185
421.7	1	21.135	22.855
421.8	1	21.135	22.525
421.9	1	20.695	22.195
422	1	20.256	21.865
422.1	1	19.397	21.535
422.2	1	19.397	21.205
422.3	1	19.02	20.875
422.4	1	18.705	20.545
422.5	1	18.391	20.215
422.6	1	17.784	19.885
422.7	1	17.784	19.555
422.8	1	17.512	19.225

422.9	1	17.26	18.895
423	1	16.799	18.565
423.1	1	16.799	18.235
423.2	1	16.59	17.905
423.3	1	16.38	17.575
423.4	1	16.15	17.245
423.5	1	15.941	16.915
423.6	1	15.731	16.585
423.7	1	15.522	16.255
423.8	1	15.312	15.925
423.9	1	15.103	15.595
424	1	14.83	15.265
424.1	1	14.516	14.935
424.2	1	14.16	14.605
424.3	1	13.762	14.275
424.4	1	13.427	13.945
424.5	1	13.092	13.615
424.6	1	12.736	13.285
424.7	1	12.401	12.955
424.8	1	12.065	12.625
424.9	1	11.709	12.295
425	1	11.353	11.965
425.1	1	11.018	11.635
425.2	1	10.683	11.305
425.3	1	10.327	10.975
425.4	1	9.992	10.645
425.5	1	9.677	10.315
425.6	1	9.342	9.985
425.7	1	8.986	9.655
425.8	1	8.651	9.325
425.9	1	8.316	8.995
426	1	8.002	8.665
426.1	1	7.667	8.335
426.2	1	7.331	8.005
426.3	1	6.996	7.675
426.4	1	6.682	7.345
426.5	1	6.389	7.015
426.6	1	6.096	6.685
426.7	1	5.781	6.355
426.8	1	5.446	6.025
426.9	1	5.111	5.695
427	1	4.755	5.365
427.1	1	4.399	5.035
427.2	1	4.064	4.705
427.3	1	3.708	4.375

427.4	1	3.372	4.045
427.5	1	3.016	3.715
427.6	1	2.681	3.385
427.7	1	2.346	3.055
427.8	1	2.346	2.725
427.9	1	1.362	2.395
428	1	0.712	2.065
428.1	1	0.398	1.805
428.2	1	0.335	1.615
428.3	1	0.272	1.425
428.4	1	0.147	1.235
428.5	1	0.168	1.045
428.6	1	0.189	0.855
428.7	1	0.189	0.665
428.8	1	0.105	0.475
428.9	1	0.126	0.285
429	1	0.126	0.095
429.1	1	0.063	0
429.2	1	0.063	0
429.3	1	0.084	0
429.4	1	0.042	0
429.5	1	0.042	0
429.6	1	0.042	0
429.7	1	0.063	0
429.8	1	0.021	0
429.9	1	0.021	0
430	1	0.021	0
430.1	1	0.021	0
430.2	1	0	0
430.3	1	0.021	0
430.4	1	0.021	0
430.5	1	0	0
430.6	1	0	0
430.7	1	0	0
430.8	1	0	0
430.9	1	0	0
431	1	0	0
431.1	1	0	0
431.2	1	0	0
431.3	1	0	0
431.4	1	0	0
431.5	1	0	0
431.6	1	0	0
431.7	1	0	0
431.8	1	0	0

431.9	1	0	0
432	1	0	0
432.1	1	0	0
432.2	1	0	0
432.3	1	0	0
432.4	1	0	0
432.5	1	0	0
432.6	1	0	0
432.7	1	0	0
432.8	1	0	0
432.9	1	0	0
433	1	0	0
433.1	1	-0.021	0
433.2	1	0	0
433.3	1	0	0
433.4	1	0	0
433.5	1	0	0
433.6	1	0	0
433.7	1	0	0
433.8	1	0	0
433.9	1	0	0
434	1	0	0
434.1	1	0	0
434.2	1	0	0
434.3	1	0	0
434.4	1	0	0
434.5	1	-0.021	0
434.6	1	0	0
434.7	1	0	0
434.8	1	-0.021	0
434.9	1	0	0
435	1	0	0
435.1	1	0	0
435.2	1	0	0
435.3	1	0	0
435.4	1	0	0
435.5	1	0	0
435.6	1	0	0
435.7	1	0	0
435.8	1	0	0
435.9	1	0	0
436	1	0	0
436.1	1	0	0
436.2	1	-0.021	0
436.3	1	0	0

436.4	1	0	0
436.5	1	0	0
436.6	1	0	0
436.7	1	0	0
436.8	1	0	0
436.9	1	0	0
437	1	-0.021	0
437.1	1	-0.021	0
437.2	1	0	0
437.3	1	0	0
437.4	1	-0.021	0
437.5	1	0	0
437.6	1	-0.021	0
437.7	1	-0.021	0
437.8	1	0	0
437.9	1	0	0
438	1	0	0
438.1	1	-0.021	0
438.2	1	-0.021	0
438.3	1	-0.021	0
438.4	1	0	0
438.5	1	0	0
438.6	1	0	0
438.7	1	0	0
438.8	1	0	0
438.9	1	0	0
439	1	-0.021	0
439.1	1	-0.021	0
439.2	1	-0.021	0
439.3	1	-0.021	0
439.4	1	0	0
439.5	1	0	0
439.6	1	0	0
439.7	1	-0.021	0
439.8	1	-0.021	0
439.9	1	0	0
440	1	0	0
440.1	1	0	0
440.2	1	0	0
440.3	1	-0.021	0
440.4	1	0	0
440.5	1	0	0
440.6	1	-0.021	0
440.7	1	-0.021	0
440.8	1	-0.021	0

440.9	1	-0.021	0
441	1	0	0
441.1	1	-0.021	0
441.2	1	0	0
441.3	1	-0.021	0
441.4	1	0	0
441.5	1	-0.021	0
441.6	1	-0.021	0
441.7	1	-0.021	0
441.8	1	-0.021	0
441.9	1	0	0
442	1	-0.021	0
442.1	1	-0.021	0
442.2	1	-0.021	0
442.3	1	-0.021	0
442.4	1	-0.021	0
442.5	1	-0.021	0
442.6	1	-0.021	0
442.7	1	-0.021	0
442.8	1	0	0
442.9	1	0	0
443	1	-0.021	0
443.1	1	-0.021	0
443.2	1	0	0
443.3	1	-0.021	0
443.4	1	0	0
443.5	1	-0.021	0
443.6	1	0	0
443.7	1	0	0
443.8	1	0	0
443.9	1	0	0
444	1	-0.021	0
444.1	1	-0.021	0
444.2	1	-0.021	0
444.3	1	0	0
444.4	1	-0.021	0
444.5	1	-0.021	0
444.6	1	-0.021	0
444.7	1	0	0
444.8	1	0	0
444.9	1	-0.021	0
445	1	-0.021	0
445.1	1	-0.021	0
445.2	1	-0.021	0
445.3	1	0	0



445.4	1	-0.021	0
445.5	1	-0.021	0
445.6	1	0	0
445.7	1	-0.021	0
445.8	1	-0.021	0
445.9	1	0	0
446	1	-0.021	0
446.1	1	-0.021	0
446.2	1	-0.021	0
446.3	1	0	0
446.4	1	0.021	0
446.5	1	0.042	0
446.6	1	0.063	0
446.7	1	0.105	0
446.8	1	0.147	0
446.9	1	0.147	0
447	1	0.377	0
447.1	1	0.545	0.165
447.2	1	0.733	0.495
447.3	1	0.901	0.825
447.4	1	0.901	1.155
447.5	1	1.215	1.485
447.6	1	1.403	1.815
447.7	1	1.592	2.145
447.8	1	1.801	2.475
447.9	1	1.801	2.805
448	1	2.262	3.135
448.1	1	2.493	3.465
448.2	1	2.702	3.795
448.3	1	2.702	4.125
448.4	1	2.933	4.455
448.5	1	3.372	4.785
448.6	1	3.624	5.115
448.7	1	3.896	5.445
448.8	1	3.896	5.775
448.9	1	4.189	6.105
449	1	4.797	6.435
449.1	1	5.132	6.765
449.2	1	5.132	7.095
449.3	1	5.467	7.425
449.4	1	6.2	7.755
449.5	1	6.577	8.085
449.6	1	6.577	8.415
449.7	1	6.975	8.745
449.8	1	7.352	9.075

449.9	1	8.148	9.405
450	1	8.525	9.735
450.1	1	8.525	10.065
450.2	1	8.881	10.395
450.3	1	9.258	10.725
450.4	1	9.95	11.055
450.5	1	9.95	11.385
450.6	1	10.285	11.715
450.7	1	10.62	12.045
450.8	1	10.955	12.375
450.9	1	11.29	12.705
451	1	11.667	13.035
451.1	1	12.044	13.365
451.2	1	12.421	13.695
451.3	1	12.84	14.025
451.4	1	13.28	14.355
451.5	1	13.72	14.685
451.6	1	14.16	15.015
451.7	1	14.6	15.345
451.8	1	15.061	15.675
451.9	1	15.501	16.005
452	1	15.961	16.335
452.1	1	16.422	16.665
452.2	1	16.883	16.995
452.3	1	17.323	17.325
452.4	1	17.784	17.655
452.5	1	18.224	17.985
452.6	1	18.622	18.315
452.7	1	18.957	18.645
452.8	1	19.271	18.975
452.9	1	19.585	19.305
453	1	19.879	19.635
453.1	1	20.193	19.965
453.2	1	20.507	20.295
453.3	1	20.821	20.625
453.4	1	21.114	20.955
453.5	1	21.408	21.285
453.6	1	21.701	21.615
453.7	1	21.994	21.945
453.8	1	22.308	22.275
453.9	1	22.602	22.605
454	1	22.895	22.935
454.1	1	23.209	23.265
454.2	1	23.502	23.595
454.3	1	23.817	23.925

454.4	1	24.131	24.255
454.5	1	24.445	24.585
454.6	1	24.759	24.915
454.7	1	25.052	25.245
454.8	1	25.367	25.575
454.9	1	25.681	25.905
455	1	25.995	26.235
455.1	1	26.288	26.47
455.2	1	26.581	26.61
455.3	1	26.833	26.75
455.4	1	27.042	26.89
455.5	1	27.273	27.03
455.6	1	27.503	27.17
455.7	1	27.713	27.31
455.8	1	27.943	27.45
455.9	1	28.194	27.59
456	1	28.425	27.73
456.1	1	28.613	27.865
456.2	1	28.781	27.995
456.3	1	28.948	28.125
456.4	1	29.095	28.255
456.5	1	29.095	28.385
456.6	1	29.409	28.515
456.7	1	29.556	28.645
456.8	1	29.682	28.775
456.9	1	29.828	28.905
457	1	29.828	29.035
457.1	1	30.142	29.22
457.2	1	30.289	29.46
457.3	1	30.457	29.7
457.4	1	30.457	29.94
457.5	1	30.771	30.18
457.6	1	30.917	30.42
457.7	1	31.085	30.66
457.8	1	31.085	30.9
457.9	1	31.253	31.14
458	1	31.567	31.38
458.1	1	31.734	31.575
458.2	1	31.902	31.725
458.3	1	31.902	31.875
458.4	1	32.049	32.025
458.5	1	32.384	32.175
458.6	1	32.53	32.325
458.7	1	32.53	32.475
458.8	1	32.677	32.625

458.9	1	32.824	32.775
459	1	33.096	32.925
459.1	1	33.222	33.03
459.2	1	33.222	33.09
459.3	1	33.368	33.15
459.4	1	33.494	33.21
459.5	1	33.766	33.27
459.6	1	33.766	33.33
459.7	1	33.892	33.39
459.8	1	34.039	33.45
459.9	1	34.164	33.51
460	1	34.164	33.57
460.1	1	34.395	33.66
460.2	1	34.478	33.78
460.3	1	34.562	33.9
460.4	1	34.709	34.02
460.5	1	34.709	34.14
460.6	1	34.772	34.26
460.7	1	34.835	34.38
460.8	1	34.897	34.5
460.9	1	35.023	34.62
461	1	35.023	34.74
461.1	1	35.086	34.815
461.2	1	35.17	34.845
461.3	1	35.233	34.875
461.4	1	35.295	34.905
461.5	1	35.358	34.935
461.6	1	35.421	34.965
461.7	1	35.484	34.995
461.8	1	35.547	35.025
461.9	1	35.61	35.055
462	1	35.672	35.085
462.1	1	35.735	35.125
462.2	1	35.777	35.175
462.3	1	35.84	35.225
462.4	1	35.882	35.275
462.5	1	35.903	35.325
462.6	1	35.945	35.375
462.7	1	35.987	35.425
462.8	1	36.028	35.475
462.9	1	36.07	35.525
463	1	36.091	35.575
463.1	1	36.091	35.625
463.2	1	36.07	35.675
463.3	1	36.07	35.725

463.4	1	36.049	35.775
463.5	1	36.028	35.825
463.6	1	36.008	35.875
463.7	1	35.987	35.925
463.8	1	35.966	35.975
463.9	1	35.924	36.025
464	1	35.903	36.075
464.1	1	35.882	36.095
464.2	1	35.861	36.085
464.3	1	35.84	36.075
464.4	1	35.84	36.065
464.5	1	35.84	36.055
464.6	1	35.84	36.045
464.7	1	35.861	36.035
464.8	1	35.903	36.025
464.9	1	35.924	36.015
465	1	35.966	36.005
465.1	1	35.987	36.005
465.2	1	36.028	36.015
465.3	1	36.049	36.025
465.4	1	36.049	36.035
465.5	1	36.049	36.045
465.6	1	36.049	36.055
465.7	1	36.028	36.065
465.8	1	36.008	36.075
465.9	1	35.987	36.085
466	1	35.945	36.095
466.1	1	35.924	36.105
466.2	1	35.882	36.115
466.3	1	35.84	36.125
466.4	1	35.819	36.135
466.5	1	35.777	36.145
466.6	1	35.735	36.155
466.7	1	35.735	36.165
466.8	1	35.672	36.175
466.9	1	35.631	36.185
467	1	35.589	36.195
467.1	1	35.589	36.19
467.2	1	35.568	36.17
467.3	1	35.526	36.15
467.4	1	35.505	36.13
467.5	1	35.484	36.11
467.6	1	35.484	36.09
467.7	1	35.484	36.07
467.8	1	35.484	36.05

467.9	1	35.505	36.03
468	1	35.505	36.01
468.1	1	35.526	35.985
468.2	1	35.547	35.955
468.3	1	35.61	35.925
468.4	1	35.631	35.895
468.5	1	35.631	35.865
468.6	1	35.651	35.835
468.7	1	35.672	35.805
468.8	1	35.735	35.775
468.9	1	35.735	35.745
469	1	35.756	35.715
469.1	1	35.777	35.715
469.2	1	35.777	35.745
469.3	1	35.819	35.775
469.4	1	35.819	35.805
469.5	1	35.84	35.835
469.6	1	35.861	35.865
469.7	1	35.903	35.895
469.8	1	35.903	35.925
469.9	1	35.924	35.955
470	1	35.924	35.985
470.1	1	35.945	36
470.2	1	35.966	36
470.3	1	35.987	36
470.4	1	36.008	36
470.5	1	36.008	36
470.6	1	36.008	36
470.7	1	36.008	36
470.8	1	35.987	36
470.9	1	35.987	36
471	1	35.966	36
471.1	1	35.945	35.98
471.2	1	35.924	35.94
471.3	1	35.882	35.9
471.4	1	35.861	35.86
471.5	1	35.84	35.82
471.6	1	35.819	35.78
471.7	1	35.819	35.74
471.8	1	35.798	35.7
471.9	1	35.798	35.66
472	1	35.777	35.62
472.1	1	35.777	35.595
472.2	1	35.756	35.585
472.3	1	35.756	35.575

472.4	1	35.735	35.565
472.5	1	35.735	35.555
472.6	1	35.714	35.545
472.7	1	35.714	35.535
472.8	1	35.693	35.525
472.9	1	35.693	35.515
473	1	35.651	35.505
473.1	1	35.631	35.495
473.2	1	35.61	35.485
473.3	1	35.589	35.475
473.4	1	35.568	35.465
473.5	1	35.547	35.455
473.6	1	35.526	35.445
473.7	1	35.505	35.435
473.8	1	35.484	35.425
473.9	1	35.463	35.415
474	1	35.442	35.405
474.1	1	35.421	35.39
474.2	1	35.4	35.37
474.3	1	35.379	35.35
474.4	1	35.358	35.33
474.5	1	35.337	35.31
474.6	1	35.316	35.29
474.7	1	35.295	35.27
474.8	1	35.274	35.25
474.9	1	35.274	35.23
475	1	35.253	35.21
475.1	1	35.233	35.2
475.2	1	35.233	35.2
475.3	1	35.233	35.2
475.4	1	35.212	35.2
475.5	1	35.212	35.2
475.6	1	35.212	35.2
475.7	1	35.233	35.2
475.8	1	35.233	35.2
475.9	1	35.233	35.2
476	1	35.233	35.2
476.1	1	35.253	35.2
476.2	1	35.253	35.2
476.3	1	35.253	35.2
476.4	1	35.253	35.2
476.5	1	35.274	35.2
476.6	1	35.274	35.2
476.7	1	35.274	35.2
476.8	1	35.274	35.2

476.9	1	35.274	35.2
477	1	35.295	35.2
477.1	1	35.295	35.2
477.2	1	35.295	35.2
477.3	1	35.295	35.2
477.4	1	35.295	35.2
477.5	1	35.316	35.2
477.6	1	35.316	35.2
477.7	1	35.316	35.2
477.8	1	35.316	35.2
477.9	1	35.316	35.2
478	1	35.316	35.2
478.1	1	35.316	35.2
478.2	1	35.316	35.2
478.3	1	35.316	35.2
478.4	1	35.295	35.2
478.5	1	35.295	35.2
478.6	1	35.295	35.2
478.7	1	35.295	35.2
478.8	1	35.295	35.2
478.9	1	35.274	35.2
479	1	35.274	35.2
479.1	1	35.274	35.2
479.2	1	35.274	35.2
479.3	1	35.253	35.2
479.4	1	35.253	35.2
479.5	1	35.253	35.2
479.6	1	35.233	35.2
479.7	1	35.233	35.2
479.8	1	35.233	35.2
479.9	1	35.233	35.2
480	1	35.233	35.2
480.1	1	35.212	35.19
480.2	1	35.212	35.17
480.3	1	35.233	35.15
480.4	1	35.233	35.13
480.5	1	35.233	35.11
480.6	1	35.233	35.09
480.7	1	35.233	35.07
480.8	1	35.233	35.05
480.9	1	35.233	35.03
481	1	35.253	35.01
481.1	1	35.253	35.005
481.2	1	35.253	35.015
481.3	1	35.253	35.025



481.4	1	35.274	35.035
481.5	1	35.274	35.045
481.6	1	35.274	35.055
481.7	1	35.274	35.065
481.8	1	35.274	35.075
481.9	1	35.274	35.085
482	1	35.274	35.095
482.1	1	35.274	35.105
482.2	1	35.274	35.115
482.3	1	35.274	35.125
482.4	1	35.274	35.135
482.5	1	35.274	35.145
482.6	1	35.274	35.155
482.7	1	35.274	35.165
482.8	1	35.274	35.175
482.9	1	35.295	35.185
483	1	35.295	35.195
483.1	1	35.295	35.215
483.2	1	35.295	35.245
483.3	1	35.295	35.275
483.4	1	35.295	35.305
483.5	1	35.295	35.335
483.6	1	35.295	35.365
483.7	1	35.274	35.395
483.8	1	35.274	35.425
483.9	1	35.274	35.455
484	1	35.274	35.485
484.1	1	35.253	35.485
484.2	1	35.253	35.455
484.3	1	35.253	35.425
484.4	1	35.253	35.395
484.5	1	35.233	35.365
484.6	1	35.233	35.335
484.7	1	35.212	35.305
484.8	1	35.191	35.275
484.9	1	35.191	35.245
485	1	35.17	35.215
485.1	1	35.149	35.19
485.2	1	35.128	35.17
485.3	1	35.107	35.15
485.4	1	35.086	35.13
485.5	1	35.086	35.11
485.6	1	35.044	35.09
485.7	1	35.044	35.07
485.8	1	35.023	35.05

485.9	1	35.023	35.03
486	1	35.023	35.01
486.1	1	34.96	35
486.2	1	34.96	35
486.3	1	34.96	35
486.4	1	34.96	35
486.5	1	34.96	35
486.6	1	34.981	35
486.7	1	35.002	35
486.8	1	35.002	35
486.9	1	35.002	35
487	1	35.023	35
487.1	1	35.023	35
487.2	1	35.023	35
487.3	1	35.023	35
487.4	1	35.023	35
487.5	1	35.044	35
487.6	1	35.023	35
487.7	1	35.023	35
487.8	1	35.023	35
487.9	1	35.023	35
488	1	35.023	35
488.1	1	35.023	34.99
488.2	1	35.023	34.97
488.3	1	35.023	34.95
488.4	1	35.023	34.93
488.5	1	35.023	34.91
488.6	1	35.002	34.89
488.7	1	35.002	34.87
488.8	1	35.002	34.85
488.9	1	35.002	34.83
489	1	35.002	34.81
489.1	1	34.981	34.79
489.2	1	34.981	34.77
489.3	1	34.981	34.75
489.4	1	34.981	34.73
489.5	1	34.981	34.71
489.6	1	34.96	34.69
489.7	1	34.96	34.67
489.8	1	34.96	34.65
489.9	1	34.939	34.63
490	1	34.918	34.61
490.1	1	34.897	34.595
490.2	1	34.855	34.585
490.3	1	34.793	34.575

490.4	1	34.73	34.565
490.5	1	34.667	34.555
490.6	1	34.583	34.545
490.7	1	34.499	34.535
490.8	1	34.416	34.525
490.9	1	34.332	34.515
491	1	34.248	34.505
491.1	1	34.164	34.45
491.2	1	34.08	34.35
491.3	1	33.997	34.25
491.4	1	33.913	34.15
491.5	1	33.808	34.05
491.6	1	33.703	33.95
491.7	1	33.62	33.85
491.8	1	33.536	33.75
491.9	1	33.431	33.65
492	1	33.326	33.55
492.1	1	33.222	33.425
492.2	1	33.075	33.275
492.3	1	32.907	33.125
492.4	1	32.74	32.975
492.5	1	32.572	32.825
492.6	1	32.405	32.675
492.7	1	32.258	32.525
492.8	1	32.09	32.375
492.9	1	31.944	32.225
493	1	31.797	32.075
493.1	1	31.651	31.905
493.2	1	31.525	31.715
493.3	1	31.399	31.525
493.4	1	31.253	31.335
493.5	1	31.106	31.145
493.6	1	30.917	30.955
493.7	1	30.666	30.765
493.8	1	30.331	30.575
493.9	1	29.954	30.385
494	1	29.577	30.195
494.1	1	29.577	29.995
494.2	1	28.865	29.785
494.3	1	28.55	29.575
494.4	1	28.278	29.365
494.5	1	28.027	29.155
494.6	1	27.775	28.945
494.7	1	27.545	28.735
494.8	1	27.357	28.525

494.9	1	27.168	28.315
495	1	27.168	28.105
495.1	1	26.833	27.875
495.2	1	26.665	27.625
495.3	1	26.498	27.375
495.4	1	26.33	27.125
495.5	1	26.33	26.875
495.6	1	25.974	26.625
495.7	1	25.786	26.375
495.8	1	25.597	26.125
495.9	1	25.597	25.875
496	1	25.408	25.625
496.1	1	25.01	25.35
496.2	1	24.78	25.05
496.3	1	24.78	24.75
496.4	1	24.508	24.45
496.5	1	24.173	24.15
496.6	1	23.523	23.85
496.7	1	23.209	23.55
496.8	1	23.209	23.25
496.9	1	22.874	22.95
497	1	22.12	22.65
497.1	1	21.68	22.365
497.2	1	21.68	22.095
497.3	1	21.198	21.825
497.4	1	20.716	21.555
497.5	1	19.774	21.285
497.6	1	19.774	21.015
497.7	1	19.292	20.745
497.8	1	18.81	20.475
497.9	1	18.349	20.205
498	1	17.532	19.935
498.1	1	17.532	19.635
498.2	1	17.176	19.305
498.3	1	16.841	18.975
498.4	1	16.527	18.645
498.5	1	16.15	18.315
498.6	1	15.752	17.985
498.7	1	15.396	17.655
498.8	1	15.082	17.325
498.9	1	15.082	16.995
499	1	14.6	16.665
499.1	1	14.411	16.335
499.2	1	14.223	16.005
499.3	1	14.034	15.675

499.4	1	13.846	15.345
499.5	1	13.636	15.015
499.6	1	13.406	14.685
499.7	1	13.155	14.355
499.8	1	12.903	14.025
499.9	1	12.652	13.695
500	1	12.359	13.365
500.1	1	12.086	13.055
500.2	1	11.793	12.765
500.3	1	11.5	12.475
500.4	1	11.207	12.185
500.5	1	10.913	11.895
500.6	1	10.641	11.605
500.7	1	10.348	11.315
500.8	1	10.075	11.025
500.9	1	9.824	10.735
501	1	9.552	10.445
501.1	1	9.3	10.145
501.2	1	9.028	9.835
501.3	1	8.777	9.525
501.4	1	8.525	9.215
501.5	1	8.274	8.905
501.6	1	8.002	8.595
501.7	1	7.729	8.285
501.8	1	7.478	7.975
501.9	1	7.227	7.665
502	1	6.975	7.355
502.1	1	6.703	7.04
502.2	1	6.431	6.72
502.3	1	6.158	6.4
502.4	1	5.886	6.08
502.5	1	5.614	5.76
502.6	1	5.341	5.44
502.7	1	5.006	5.12
502.8	1	4.566	4.8
502.9	1	4.106	4.48
503	1	3.603	4.16
503.1	1	3.1	3.85
503.2	1	2.618	3.55
503.3	1	2.095	3.25
503.4	1	1.592	2.95
503.5	1	1.089	2.65
503.6	1	0.607	2.35
503.7	1	0.607	2.05
503.8	1	0.23	1.75

503.9	1	0.209	1.45
504	1	0.105	1.15
504.1	1	0.105	0.95
504.2	1	0.126	0.85
504.3	1	0.105	0.75
504.4	1	0.063	0.65
504.5	1	0.084	0.55
504.6	1	0.084	0.45
504.7	1	0.042	0.35
504.8	1	0.042	0.25
504.9	1	0.063	0.15
505	1	0.063	0.05
505.1	2	0.021	0
505.2	2	0.042	0
505.3	2	0.021	0
505.4	2	0.021	0
505.5	2	0.021	0
505.6	2	0	0
505.7	2	0	0
505.8	2	0.021	0
505.9	2	0.021	0
506	2	0	0
506.1	2	0	0
506.2	2	0	0
506.3	2	0	0
506.4	2	0	0
506.5	2	0	0
506.6	2	0	0
506.7	2	0	0
506.8	2	0	0
506.9	2	0	0
507	2	0	0
507.1	2	0	0
507.2	2	0	0
507.3	2	0	0
507.4	2	0	0
507.5	2	0	0
507.6	2	0	0
507.7	2	0	0
507.8	2	0	0
507.9	2	0	0
508	2	0	0
508.1	2	0	0
508.2	2	0	0
508.3	2	0	0

508.4	2	0	0
508.5	2	0	0
508.6	2	0	0
508.7	2	0	0
508.8	2	0	0
508.9	2	0	0
509	2	0	0
509.1	2	0	0
509.2	2	0.021	0
509.3	2	0.042	0
509.4	2	0.063	0
509.5	2	0.063	0
509.6	2	0.084	0
509.7	2	0.105	0
509.8	2	0.126	0
509.9	2	0.126	0
510	2	0.147	0
510.1	2	0.189	0.06
510.2	2	0.23	0.18
510.3	2	0.293	0.3
510.4	2	0.419	0.42
510.5	2	0.566	0.54
510.6	2	0.712	0.66
510.7	2	0.859	0.78
510.8	2	1.005	0.9
510.9	2	1.152	1.02
511	2	1.299	1.14
511.1	2	1.445	1.315
511.2	2	1.592	1.545
511.3	2	1.739	1.775
511.4	2	1.885	2.005
511.5	2	2.032	2.235
511.6	2	2.199	2.465
511.7	2	2.388	2.695
511.8	2	2.576	2.925
511.9	2	2.576	3.155
512	2	2.995	3.385
512.1	2	3.205	3.6
512.2	2	3.393	3.8
512.3	2	3.603	4
512.4	2	3.812	4.2
512.5	2	4.001	4.4
512.6	2	4.231	4.6
512.7	2	4.441	4.8
512.8	2	4.692	5

512.9	2	4.922	5.2
513	2	5.174	5.4
513.1	2	5.404	5.55
513.2	2	5.614	5.65
513.3	2	5.614	5.75
513.4	2	5.949	5.85
513.5	2	6.054	5.95
513.6	2	6.158	6.05
513.7	2	6.263	6.15
513.8	2	6.263	6.25
513.9	2	6.431	6.35
514	2	6.494	6.45
514.1	2	6.556	6.6
514.2	2	6.556	6.8
514.3	2	6.703	7
514.4	2	6.787	7.2
514.5	2	6.912	7.4
514.6	2	6.912	7.6
514.7	2	7.038	7.8
514.8	2	7.31	8
514.9	2	7.436	8.2
515	2	7.562	8.4
515.1	2	7.562	8.555
515.2	2	7.708	8.665
515.3	2	7.981	8.775
515.4	2	8.127	8.885
515.5	2	8.127	8.995
515.6	2	8.274	9.105
515.7	2	8.588	9.215
515.8	2	8.735	9.325
515.9	2	8.735	9.435
516	2	8.902	9.545
516.1	2	9.049	9.645
516.2	2	9.384	9.735
516.3	2	9.531	9.825
516.4	2	9.531	9.915
516.5	2	9.698	10.005
516.6	2	9.845	10.095
516.7	2	10.159	10.185
516.8	2	10.159	10.275
516.9	2	10.306	10.365
517	2	10.452	10.455
517.1	2	10.599	10.57
517.2	2	10.767	10.71
517.3	2	10.913	10.85



517.4	2	11.06	10.99
517.5	2	11.207	11.13
517.6	2	11.353	11.27
517.7	2	11.5	11.41
517.8	2	11.667	11.55
517.9	2	11.814	11.69
518	2	11.982	11.83
518.1	2	12.149	12.005
518.2	2	12.338	12.215
518.3	2	12.505	12.425
518.4	2	12.694	12.635
518.5	2	12.903	12.845
518.6	2	13.092	13.055
518.7	2	13.301	13.265
518.8	2	13.511	13.475
518.9	2	13.741	13.685
519	2	13.992	13.895
519.1	2	14.244	14.1
519.2	2	14.495	14.3
519.3	2	14.747	14.5
519.4	2	15.019	14.7
519.5	2	15.27	14.9
519.6	2	15.543	15.1
519.7	2	15.815	15.3
519.8	2	16.087	15.5
519.9	2	16.318	15.7
520	2	16.527	15.9
520.1	2	16.736	16.085
520.2	2	16.946	16.255
520.3	2	17.134	16.425
520.4	2	17.302	16.595
520.5	2	17.47	16.765
520.6	2	17.616	16.935
520.7	2	17.763	17.105
520.8	2	17.889	17.275
520.9	2	17.993	17.445
521	2	18.098	17.615
521.1	2	18.182	17.765
521.2	2	18.266	17.895
521.3	2	18.37	18.025
521.4	2	18.475	18.155
521.5	2	18.601	18.285
521.6	2	18.747	18.415
521.7	2	18.894	18.545
521.8	2	19.02	18.675

521.9	2	19.166	18.805
522	2	19.313	18.935
522.1	2	19.481	19.055
522.2	2	19.627	19.165
522.3	2	19.774	19.275
522.4	2	19.941	19.385
522.5	2	19.941	19.495
522.6	2	20.256	19.605
522.7	2	20.402	19.715
522.8	2	20.57	19.825
522.9	2	20.737	19.935
523	2	20.884	20.045
523.1	2	21.031	20.145
523.2	2	21.177	20.235
523.3	2	21.324	20.325
523.4	2	21.324	20.415
523.5	2	21.596	20.505
523.6	2	21.722	20.595
523.7	2	21.848	20.685
523.8	2	21.848	20.775
523.9	2	21.952	20.865
524	2	22.183	20.955
524.1	2	22.287	21.05
524.2	2	22.392	21.15
524.3	2	22.392	21.25
524.4	2	22.455	21.35
524.5	2	22.581	21.45
524.6	2	22.623	21.55
524.7	2	22.623	21.65
524.8	2	22.643	21.75
524.9	2	22.643	21.85
525	2	22.664	21.95
525.1	2	22.664	22.05
525.2	2	22.664	22.15
525.3	2	22.706	22.25
525.4	2	22.79	22.35
525.5	2	22.832	22.45
525.6	2	22.832	22.55
525.7	2	22.874	22.65
525.8	2	22.916	22.75
525.9	2	23.041	22.85
526	2	23.041	22.95
526.1	2	23.104	23.04
526.2	2	23.188	23.12
526.3	2	23.251	23.2

526.4	2	23.439	23.28
526.5	2	23.439	23.36
526.6	2	23.544	23.44
526.7	2	23.628	23.52
526.8	2	23.733	23.6
526.9	2	23.837	23.68
527	2	23.942	23.76
527.1	2	24.047	23.835
527.2	2	24.131	23.905
527.3	2	24.235	23.975
527.4	2	24.34	24.045
527.5	2	24.424	24.115
527.6	2	24.529	24.185
527.7	2	24.612	24.255
527.8	2	24.717	24.325
527.9	2	24.801	24.395
528	2	24.864	24.465
528.1	2	24.885	24.52
528.2	2	24.885	24.56
528.3	2	24.864	24.6
528.4	2	24.843	24.64
528.5	2	24.822	24.68
528.6	2	24.801	24.72
528.7	2	24.78	24.76
528.8	2	24.759	24.8
528.9	2	24.738	24.84
529	2	24.738	24.88
529.1	2	24.738	24.905
529.2	2	24.738	24.915
529.3	2	24.738	24.925
529.4	2	24.738	24.935
529.5	2	24.738	24.945
529.6	2	24.738	24.955
529.7	2	24.738	24.965
529.8	2	24.738	24.975
529.9	2	24.738	24.985
530	2	24.738	24.995
530.1	2	24.738	25
530.2	2	24.738	25
530.3	2	24.738	25
530.4	2	24.738	25
530.5	2	24.738	25
530.6	2	24.738	25
530.7	2	24.738	25
530.8	2	24.738	25

530.9	2	24.738	25
531	2	24.738	25
531.1	2	24.738	25
531.2	2	24.738	25
531.3	2	24.738	25
531.4	2	24.738	25
531.5	2	24.738	25
531.6	2	24.738	25
531.7	2	24.738	25
531.8	2	24.738	25
531.9	2	24.738	25
532	2	24.738	25
532.1	2	24.738	25
532.2	2	24.738	25
532.3	2	24.738	25
532.4	2	24.738	25
532.5	2	24.717	25
532.6	2	24.717	25
532.7	2	24.696	25
532.8	2	24.654	25
532.9	2	24.633	25
533	2	24.633	25
533.1	2	24.633	25
533.2	2	24.654	25
533.3	2	24.675	25
533.4	2	24.696	25
533.5	2	24.696	25
533.6	2	24.78	25
533.7	2	24.822	25
533.8	2	24.906	25
533.9	2	24.906	25
534	2	24.99	25
534.1	2	25.178	25
534.2	2	25.262	25
534.3	2	25.325	25
534.4	2	25.325	25
534.5	2	25.388	25
534.6	2	25.492	25
534.7	2	25.534	25
534.8	2	25.534	25
534.9	2	25.576	25
535	2	25.639	25
535.1	2	25.723	25.03
535.2	2	25.723	25.09
535.3	2	25.765	25.15

535.4	2	25.806	25.21
535.5	2	25.827	25.27
535.6	2	25.911	25.33
535.7	2	25.911	25.39
535.8	2	25.932	25.45
535.9	2	25.974	25.51
536	2	26.058	25.57
536.1	2	26.058	25.61
536.2	2	26.079	25.63
536.3	2	26.121	25.65
536.4	2	26.142	25.67
536.5	2	26.142	25.69
536.6	2	26.142	25.71
536.7	2	26.121	25.73
536.8	2	26.058	25.75
536.9	2	25.995	25.77
537	2	25.932	25.79
537.1	2	25.848	25.81
537.2	2	25.806	25.83
537.3	2	25.744	25.85
537.4	2	25.702	25.87
537.5	2	25.681	25.89
537.6	2	25.66	25.91
537.7	2	25.66	25.93
537.8	2	25.66	25.95
537.9	2	25.66	25.97
538	2	25.66	25.99
538.1	2	25.66	25.98
538.2	2	25.66	25.94
538.3	2	25.681	25.9
538.4	2	25.681	25.86
538.5	2	25.681	25.82
538.6	2	25.681	25.78
538.7	2	25.681	25.74
538.8	2	25.639	25.7
538.9	2	25.618	25.66
539	2	25.576	25.62
539.1	2	25.534	25.58
539.2	2	25.492	25.54
539.3	2	25.45	25.5
539.4	2	25.408	25.46
539.5	2	25.346	25.42
539.6	2	25.304	25.38
539.7	2	25.283	25.34
539.8	2	25.262	25.3

539.9	2	25.241	25.26
540	2	25.241	25.22
540.1	2	25.262	25.19
540.2	2	25.262	25.17
540.3	2	25.262	25.15
540.4	2	25.262	25.13
540.5	2	25.262	25.11
540.6	2	25.262	25.09
540.7	2	25.262	25.07
540.8	2	25.262	25.05
540.9	2	25.262	25.03
541	2	25.241	25.01
541.1	2	25.22	25
541.2	2	25.178	25
541.3	2	25.136	25
541.4	2	25.094	25
541.5	2	25.052	25
541.6	2	25.01	25
541.7	2	25.01	25
541.8	2	24.948	25
541.9	2	24.948	25
542	2	24.969	25
542.1	2	24.99	25
542.2	2	24.99	25
542.3	2	25.01	25
542.4	2	25.01	25
542.5	2	25.01	25
542.6	2	25.01	25
542.7	2	24.948	25
542.8	2	24.885	25
542.9	2	24.801	25
543	2	24.801	25
543.1	2	24.738	24.97
543.2	2	24.55	24.91
543.3	2	24.466	24.85
543.4	2	24.361	24.79
543.5	2	24.361	24.73
543.6	2	24.277	24.67
543.7	2	24.089	24.61
543.8	2	24.005	24.55
543.9	2	24.005	24.49
544	2	23.9	24.43
544.1	2	23.817	24.335
544.2	2	23.628	24.205
544.3	2	23.628	24.075

544.4	2	23.544	23.945
544.5	2	23.439	23.815
544.6	2	23.251	23.685
544.7	2	23.146	23.555
544.8	2	23.146	23.425
544.9	2	22.979	23.295
545	2	22.748	23.165
545.1	2	22.204	22.935
545.2	2	22.204	22.605
545.3	2	21.889	22.275
545.4	2	21.575	21.945
545.5	2	21.261	21.615
545.6	2	20.57	21.285
545.7	2	20.57	20.955
545.8	2	20.151	20.625
545.9	2	19.648	20.295
546	2	19.103	19.965
546.1	2	18.559	19.635
546.2	2	18.014	19.305
546.3	2	17.47	18.975
546.4	2	16.946	18.645
546.5	2	16.485	18.315
546.6	2	16.087	17.985
546.7	2	15.71	17.655
546.8	2	15.375	17.325
546.9	2	15.103	16.995
547	2	14.851	16.665
547.1	2	14.642	16.335
547.2	2	14.453	16.005
547.3	2	14.244	15.675
547.4	2	14.034	15.345
547.5	2	13.825	15.015
547.6	2	13.615	14.685
547.7	2	13.406	14.355
547.8	2	13.155	14.025
547.9	2	12.84	13.695
548	2	12.505	13.365
548.1	2	12.128	13.035
548.2	2	11.751	12.705
548.3	2	11.395	12.375
548.4	2	11.018	12.045
548.5	2	10.662	11.715
548.6	2	10.285	11.385
548.7	2	9.929	11.055
548.8	2	9.552	10.725

548.9	2	9.175	10.395
549	2	8.798	10.065
549.1	2	8.463	9.735
549.2	2	8.127	9.405
549.3	2	7.813	9.075
549.4	2	7.52	8.745
549.5	2	7.269	8.415
549.6	2	7.038	8.085
549.7	2	6.808	7.755
549.8	2	6.577	7.425
549.9	2	6.347	7.095
550	2	6.116	6.765
550.1	2	5.886	6.435
550.2	2	5.614	6.105
550.3	2	5.3	5.775
550.4	2	4.985	5.445
550.5	2	4.65	5.115
550.6	2	4.273	4.785
550.7	2	3.896	4.455
550.8	2	3.896	4.125
550.9	2	3.163	3.795
551	2	2.765	3.465
551.1	2	2.388	3.135
551.2	2	2.011	2.805
551.3	2	2.011	2.475
551.4	2	1.278	2.145
551.5	2	0.838	1.815
551.6	2	0.398	1.485
551.7	2	0.398	1.155
551.8	2	0.272	0.825
551.9	2	0.189	0.495
552	2	0.105	0.165
552.1	2	0.147	0
552.2	2	0.147	0
552.3	2	0.084	0
552.4	2	0.084	0
552.5	2	0.105	0
552.6	2	0.105	0
552.7	2	0.084	0
552.8	2	0.063	0
552.9	2	0.063	0
553	2	0.042	0
553.1	2	0.042	0
553.2	2	0.042	0
553.3	2	0.021	0



553.4	2	0.021	0
553.5	2	0.021	0
553.6	2	0.021	0
553.7	2	0	0
553.8	2	0	0
553.9	2	0	0
554	2	0	0
554.1	2	0	0
554.2	2	0	0
554.3	2	0	0
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554.5	2	0	0
554.6	2	0	0
554.7	2	0	0
554.8	2	0	0
554.9	2	0	0
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555.1	2	0	0
555.2	2	0	0
555.3	2	0	0
555.4	2	0	0
555.5	2	0	0
555.6	2	0	0
555.7	2	0	0
555.8	2	0	0
555.9	2	0	0
556	2	0	0
556.1	2	0	0
556.2	2	0	0
556.3	2	0	0
556.4	2	0	0
556.5	2	0	0
556.6	2	0	0
556.7	2	0	0
556.8	2	-0.021	0
556.9	2	0	0
557	2	0	0
557.1	2	-0.021	0
557.2	2	0	0
557.3	2	-0.021	0
557.4	2	0	0
557.5	2	0	0
557.6	2	0	0
557.7	2	0	0
557.8	2	0	0

557.9	2	0	0
558	2	0	0
558.1	2	-0.021	0
558.2	2	-0.021	0
558.3	2	0	0
558.4	2	0	0
558.5	2	-0.021	0
558.6	2	-0.021	0
558.7	2	0	0
558.8	2	0	0
558.9	2	0	0
559	2	-0.021	0
559.1	2	0	0
559.2	2	0	0
559.3	2	0	0
559.4	2	-0.021	0
559.5	2	-0.021	0
559.6	2	-0.021	0
559.7	2	0	0
559.8	2	0	0
559.9	2	0	0
560	2	0	0
560.1	2	0	0
560.2	2	0	0
560.3	2	0	0
560.4	2	0	0
560.5	2	0	0
560.6	2	0	0
560.7	2	0	0
560.8	2	-0.021	0
560.9	2	-0.021	0
561	2	0	0
561.1	2	0	0
561.2	2	-0.021	0
561.3	2	-0.021	0
561.4	2	-0.021	0
561.5	2	-0.021	0
561.6	2	0	0
561.7	2	-0.021	0
561.8	2	-0.021	0
561.9	2	0	0
562	2	0	0
562.1	2	0	0
562.2	2	-0.021	0
562.3	2	-0.021	0

562.4	2	-0.021	0
562.5	2	-0.021	0
562.6	2	-0.021	0
562.7	2	-0.021	0
562.8	2	0	0
562.9	2	-0.021	0
563	2	0	0
563.1	2	0	0
563.2	2	0	0
563.3	2	0	0
563.4	2	-0.021	0
563.5	2	-0.021	0
563.6	2	-0.021	0
563.7	2	-0.021	0
563.8	2	-0.021	0
563.9	2	-0.021	0
564	2	-0.021	0
564.1	2	0	0
564.2	2	-0.021	0
564.3	2	0	0
564.4	2	0	0
564.5	2	0	0
564.6	2	0	0
564.7	2	0	0
564.8	2	0	0
564.9	2	0	0
565	2	0	0
565.1	2	-0.021	0
565.2	2	0	0
565.3	2	0	0
565.4	2	-0.021	0
565.5	2	0	0
565.6	2	-0.021	0
565.7	2	-0.021	0
565.8	2	0	0
565.9	2	0	0
566	2	0	0
566.1	2	0	0
566.2	2	-0.021	0
566.3	2	-0.021	0
566.4	2	0	0
566.5	2	-0.021	0
566.6	2	0	0
566.7	2	-0.021	0
566.8	2	-0.021	0

566.9	2	-0.021	0
567	2	-0.021	0
567.1	2	-0.021	0
567.2	2	0	0
567.3	2	0.021	0
567.4	2	0.021	0
567.5	2	0.042	0
567.6	2	0.063	0
567.7	2	0.084	0
567.8	2	0.126	0
567.9	2	0.189	0
568	2	0.335	0
568.1	2	0.503	0.165
568.2	2	0.691	0.495
568.3	2	0.88	0.825
568.4	2	1.068	1.155
568.5	2	1.257	1.485
568.6	2	1.466	1.815
568.7	2	1.697	2.145
568.8	2	1.969	2.475
568.9	2	2.22	2.805
569	2	2.493	3.135
569.1	2	2.765	3.465
569.2	2	3.016	3.795
569.3	2	3.289	4.125
569.4	2	3.582	4.455
569.5	2	3.875	4.785
569.6	2	4.189	5.115
569.7	2	4.189	5.445
569.8	2	4.86	5.775
569.9	2	5.237	6.105
570	2	5.635	6.435
570.1	2	6.033	6.765
570.2	2	6.033	7.095
570.3	2	6.808	7.425
570.4	2	7.185	7.755
570.5	2	7.541	8.085
570.6	2	7.541	8.415
570.7	2	8.211	8.745
570.8	2	8.504	9.075
570.9	2	8.777	9.405
571	2	8.777	9.735
571.1	2	9.049	10.055
571.2	2	9.615	10.365
571.3	2	9.908	10.675

571.4	2	10.222	10.985
571.5	2	10.222	11.295
571.6	2	10.557	11.605
571.7	2	11.207	11.915
571.8	2	11.5	12.225
571.9	2	11.5	12.535
572	2	11.835	12.845
572.1	2	12.149	13.08
572.2	2	12.778	13.24
572.3	2	13.113	13.4
572.4	2	13.113	13.56
572.5	2	13.427	13.72
572.6	2	13.972	13.88
572.7	2	14.244	14.04
572.8	2	14.244	14.2
572.9	2	14.516	14.36
573	2	14.788	14.52
573.1	2	15.312	14.67
573.2	2	15.312	14.81
573.3	2	15.563	14.95
573.4	2	15.815	15.09
573.5	2	16.045	15.23
573.6	2	16.38	15.37
573.7	2	16.38	15.51
573.8	2	16.506	15.65
573.9	2	16.611	15.79
574	2	16.695	15.93
574.1	2	16.778	16.05
574.2	2	16.841	16.15
574.3	2	16.883	16.25
574.4	2	16.925	16.35
574.5	2	16.946	16.45
574.6	2	16.946	16.55
574.7	2	16.946	16.65
574.8	2	16.925	16.75
574.9	2	16.883	16.85
575	2	16.883	16.95
575.1	2	16.904	17
575.2	2	16.925	17
575.3	2	16.946	17
575.4	2	16.967	17
575.5	2	16.988	17
575.6	2	16.988	17
575.7	2	16.946	17
575.8	2	16.862	17

575.9	2	16.799	17
576	2	16.736	17
576.1	2	16.716	17
576.2	2	16.695	17
576.3	2	16.716	17
576.4	2	16.736	17
576.5	2	16.757	17
576.6	2	16.778	17
576.7	2	16.799	17
576.8	2	16.799	17
576.9	2	16.841	17
577	2	16.862	17
577.1	2	16.904	17.025
577.2	2	16.946	17.075
577.3	2	17.009	17.125
577.4	2	17.072	17.175
577.5	2	17.134	17.225
577.6	2	17.176	17.275
577.7	2	17.197	17.325
577.8	2	17.218	17.375
577.9	2	17.218	17.425
578	2	17.239	17.475
578.1	2	17.239	17.51
578.2	2	17.218	17.53
578.3	2	17.197	17.55
578.4	2	17.176	17.57
578.5	2	17.155	17.59
578.6	2	17.134	17.61
578.7	2	17.114	17.63
578.8	2	17.093	17.65
578.9	2	17.093	17.67
579	2	17.093	17.69
579.1	2	17.093	17.7
579.2	2	17.093	17.7
579.3	2	17.093	17.7
579.4	2	17.134	17.7
579.5	2	17.155	17.7
579.6	2	17.197	17.7
579.7	2	17.239	17.7
579.8	2	17.239	17.7
579.9	2	17.323	17.7
580	2	17.365	17.7
580.1	2	17.386	17.69
580.2	2	17.386	17.67
580.3	2	17.407	17.65

580.4	2	17.407	17.63
580.5	2	17.386	17.61
580.6	2	17.365	17.59
580.7	2	17.365	17.57
580.8	2	17.239	17.55
580.9	2	17.176	17.53
581	2	17.114	17.51
581.1	2	17.114	17.475
581.2	2	17.03	17.425
581.3	2	16.946	17.375
581.4	2	16.925	17.325
581.5	2	16.925	17.275
581.6	2	16.925	17.225
581.7	2	16.925	17.175
581.8	2	16.925	17.125
581.9	2	16.925	17.075
582	2	16.925	17.025
582.1	2	16.904	16.995
582.2	2	16.883	16.985
582.3	2	16.799	16.975
582.4	2	16.799	16.965
582.5	2	16.757	16.955
582.6	2	16.736	16.945
582.7	2	16.674	16.935
582.8	2	16.674	16.925
582.9	2	16.653	16.915
583	2	16.632	16.905
583.1	2	16.611	16.885
583.2	2	16.569	16.855
583.3	2	16.569	16.825
583.4	2	16.548	16.795
583.5	2	16.548	16.765
583.6	2	16.548	16.735
583.7	2	16.569	16.705
583.8	2	16.59	16.675
583.9	2	16.59	16.645
584	2	16.611	16.615
584.1	2	16.653	16.62
584.2	2	16.674	16.66
584.3	2	16.695	16.7
584.4	2	16.716	16.74
584.5	2	16.736	16.78
584.6	2	16.778	16.82
584.7	2	16.82	16.86
584.8	2	16.862	16.9

584.9	2	16.925	16.94
585	2	16.967	16.98
585.1	2	17.009	17.005
585.2	2	17.051	17.015
585.3	2	17.114	17.025
585.4	2	17.134	17.035
585.5	2	17.176	17.045
585.6	2	17.197	17.055
585.7	2	17.218	17.065
585.8	2	17.218	17.075
585.9	2	17.239	17.085
586	2	17.239	17.095
586.1	2	17.239	17.095
586.2	2	17.218	17.085
586.3	2	17.218	17.075
586.4	2	17.197	17.065
586.5	2	17.176	17.055
586.6	2	17.114	17.045
586.7	2	17.051	17.035
586.8	2	16.988	17.025
586.9	2	16.925	17.015
587	2	16.883	17.005
587.1	2	16.862	16.98
587.2	2	16.82	16.94
587.3	2	16.82	16.9
587.4	2	16.82	16.86
587.5	2	16.82	16.82
587.6	2	16.82	16.78
587.7	2	16.82	16.74
587.8	2	16.82	16.7
587.9	2	16.799	16.66
588	2	16.799	16.62
588.1	2	16.799	16.595
588.2	2	16.799	16.585
588.3	2	16.799	16.575
588.4	2	16.778	16.565
588.5	2	16.778	16.555
588.6	2	16.674	16.545
588.7	2	16.611	16.535
588.8	2	16.548	16.525
588.9	2	16.506	16.515
589	2	16.464	16.505
589.1	2	16.443	16.5
589.2	2	16.422	16.5
589.3	2	16.422	16.5



589.4	2	16.422	16.5
589.5	2	16.401	16.5
589.6	2	16.401	16.5
589.7	2	16.401	16.5
589.8	2	16.401	16.5
589.9	2	16.401	16.5
590	2	16.401	16.5
590.1	2	16.401	16.505
590.2	2	16.422	16.515
590.3	2	16.422	16.525
590.4	2	16.443	16.535
590.5	2	16.506	16.545
590.6	2	16.548	16.555
590.7	2	16.548	16.565
590.8	2	16.569	16.575
590.9	2	16.59	16.585
591	2	16.653	16.595
591.1	2	16.695	16.62
591.2	2	16.695	16.66
591.3	2	16.716	16.7
591.4	2	16.778	16.74
591.5	2	16.82	16.78
591.6	2	16.82	16.82
591.7	2	16.841	16.86
591.8	2	16.883	16.9
591.9	2	16.946	16.94
592	2	16.946	16.98
592.1	2	16.967	17.03
592.2	2	16.988	17.09
592.3	2	17.03	17.15
592.4	2	17.114	17.21
592.5	2	17.114	17.27
592.6	2	17.197	17.33
592.7	2	17.281	17.39
592.8	2	17.428	17.45
592.9	2	17.428	17.51
593	2	17.512	17.57
593.1	2	17.595	17.645
593.2	2	17.7	17.735
593.3	2	17.805	17.825
593.4	2	17.91	17.915
593.5	2	18.014	18.005
593.6	2	18.119	18.095
593.7	2	18.224	18.185
593.8	2	18.328	18.275

593.9	2	18.454	18.365
594	2	18.559	18.455
594.1	2	18.664	18.535
594.2	2	18.789	18.605
594.3	2	18.894	18.675
594.4	2	18.999	18.745
594.5	2	19.103	18.815
594.6	2	19.208	18.885
594.7	2	19.334	18.955
594.8	2	19.439	19.025
594.9	2	19.543	19.095
595	2	19.648	19.165
595.1	2	19.753	19.25
595.2	2	19.858	19.35
595.3	2	19.983	19.45
595.4	2	20.088	19.55
595.5	2	20.193	19.65
595.6	2	20.297	19.75
595.7	2	20.402	19.85
595.8	2	20.528	19.95
595.9	2	20.633	20.05
596	2	20.737	20.15
596.1	2	20.842	20.24
596.2	2	20.947	20.32
596.3	2	21.052	20.4
596.4	2	21.156	20.48
596.5	2	21.24	20.56
596.6	2	21.324	20.64
596.7	2	21.408	20.72
596.8	2	21.491	20.8
596.9	2	21.554	20.88
597	2	21.617	20.96
597.1	2	21.659	21.005
597.2	2	21.701	21.015
597.3	2	21.743	21.025
597.4	2	21.785	21.035
597.5	2	21.806	21.045
597.6	2	21.827	21.055
597.7	2	21.827	21.065
597.8	2	21.827	21.075
597.9	2	21.785	21.085
598	2	21.743	21.095
598.1	2	21.743	21.105
598.2	2	21.659	21.115
598.3	2	21.617	21.125

598.4	2	21.596	21.135
598.5	2	21.554	21.145
598.6	2	21.554	21.155
598.7	2	21.512	21.165
598.8	2	21.512	21.175
598.9	2	21.512	21.185
599	2	21.512	21.195
599.1	2	21.533	21.22
599.2	2	21.533	21.26
599.3	2	21.554	21.3
599.4	2	21.554	21.34
599.5	2	21.575	21.38
599.6	2	21.638	21.42
599.7	2	21.68	21.46
599.8	2	21.722	21.5
599.9	2	21.722	21.54
600	2	21.785	21.58
600.1	2	21.868	21.62
600.2	2	21.931	21.66
600.3	2	21.931	21.7
600.4	2	21.973	21.74
600.5	2	22.015	21.78
600.6	2	22.036	21.82
600.7	2	22.036	21.86
600.8	2	22.036	21.9
600.9	2	22.036	21.94
601	2	22.036	21.98
601.1	2	22.036	22.02
601.2	2	22.036	22.06
601.3	2	22.036	22.1
601.4	2	22.015	22.14
601.5	2	22.015	22.18
601.6	2	22.015	22.22
601.7	2	22.015	22.26
601.8	2	22.015	22.3
601.9	2	22.036	22.34
602	2	22.036	22.38
602.1	2	22.057	22.405
602.2	2	22.078	22.415
602.3	2	22.078	22.425
602.4	2	22.099	22.435
602.5	2	22.12	22.445
602.6	2	22.141	22.455
602.7	2	22.141	22.465
602.8	2	22.141	22.475

602.9	2	22.183	22.485
603	2	22.204	22.495
603.1	2	22.204	22.5
603.2	2	22.225	22.5
603.3	2	22.225	22.5
603.4	2	22.246	22.5
603.5	2	22.246	22.5
603.6	2	22.266	22.5
603.7	2	22.287	22.5
603.8	2	22.287	22.5
603.9	2	22.308	22.5
604	2	22.308	22.5
604.1	2	22.329	22.5
604.2	2	22.371	22.5
604.3	2	22.413	22.5
604.4	2	22.497	22.5
604.5	2	22.56	22.5
604.6	2	22.602	22.5
604.7	2	22.664	22.5
604.8	2	22.727	22.5
604.9	2	22.79	22.5
605	2	22.832	22.5
605.1	2	22.895	22.51
605.2	2	22.958	22.53
605.3	2	23.021	22.55
605.4	2	23.062	22.57
605.5	2	23.125	22.59
605.6	2	23.188	22.61
605.7	2	23.251	22.63
605.8	2	23.335	22.65
605.9	2	23.419	22.67
606	2	23.481	22.69
606.1	2	23.565	22.75
606.2	2	23.649	22.85
606.3	2	23.733	22.95
606.4	2	23.817	23.05
606.5	2	23.9	23.15
606.6	2	23.984	23.25
606.7	2	24.068	23.35
606.8	2	24.173	23.45
606.9	2	24.256	23.55
607	2	24.361	23.65
607.1	2	24.466	23.77
607.2	2	24.571	23.91
607.3	2	24.675	24.05

607.4	2	24.801	24.19
607.5	2	24.906	24.33
607.6	2	25.01	24.47
607.7	2	25.01	24.61
607.8	2	25.178	24.75
607.9	2	25.241	24.89
608	2	25.304	25.03
608.1	2	25.346	25.145
608.2	2	25.346	25.235
608.3	2	25.45	25.325
608.4	2	25.492	25.415
608.5	2	25.534	25.505
608.6	2	25.534	25.595
608.7	2	25.576	25.685
608.8	2	25.681	25.775
608.9	2	25.744	25.865
609	2	25.744	25.955
609.1	2	25.786	26.025
609.2	2	25.911	26.075
609.3	2	25.974	26.125
609.4	2	26.037	26.175
609.5	2	26.037	26.225
609.6	2	26.1	26.275
609.7	2	26.246	26.325
609.8	2	26.309	26.375
609.9	2	26.309	26.425
610	2	26.393	26.475
610.1	2	26.477	26.525
610.2	2	26.623	26.575
610.3	2	26.707	26.625
610.4	2	26.707	26.675
610.5	2	26.77	26.725
610.6	2	26.854	26.775
610.7	2	26.959	26.825
610.8	2	26.959	26.875
610.9	2	26.979	26.925
611	2	27	26.975
611.1	2	27.021	26.955
611.2	2	27	26.865
611.3	2	27	26.775
611.4	2	26.938	26.685
611.5	2	26.896	26.595
611.6	2	26.77	26.505
611.7	2	26.77	26.415
611.8	2	26.686	26.325

611.9	2	26.477	26.235
612	2	26.121	26.145
612.1	2	25.681	25.935
612.2	2	25.199	25.605
612.3	2	24.738	25.275
612.4	2	24.34	24.945
612.5	2	24.026	24.615
612.6	2	23.754	24.285
612.7	2	23.523	23.955
612.8	2	23.293	23.625
612.9	2	23.062	23.295
613	2	22.874	22.965
613.1	2	22.706	22.635
613.2	2	22.518	22.305
613.3	2	22.266	21.975
613.4	2	21.931	21.645
613.5	2	21.554	21.315
613.6	2	21.177	20.985
613.7	2	20.8	20.655
613.8	2	20.444	20.325
613.9	2	20.088	19.995
614	2	19.732	19.665
614.1	2	19.397	19.335
614.2	2	19.103	19.005
614.3	2	18.852	18.675
614.4	2	18.601	18.345
614.5	2	18.349	18.015
614.6	2	18.119	17.685
614.7	2	17.889	17.355
614.8	2	17.616	17.025
614.9	2	17.302	16.695
615	2	16.988	16.365
615.1	2	16.653	16.035
615.2	2	16.276	15.705
615.3	2	15.857	15.375
615.4	2	15.396	15.045
615.5	2	14.83	14.715
615.6	2	14.223	14.385
615.7	2	13.636	14.055
615.8	2	13.636	13.725
615.9	2	12.589	13.395
616	2	12.086	13.065
616.1	2	11.584	12.735
616.2	2	11.102	12.405
616.3	2	10.662	12.075

616.4	2	10.264	11.745
616.5	2	9.929	11.415
616.6	2	9.615	11.085
616.7	2	9.342	10.755
616.8	2	9.112	10.425
616.9	2	8.902	10.095
617	2	8.672	9.765
617.1	2	8.483	9.435
617.2	2	8.274	9.105
617.3	2	8.274	8.775
617.4	2	7.75	8.445
617.5	2	7.457	8.115
617.6	2	7.143	7.785
617.7	2	7.143	7.455
617.8	2	6.41	7.125
617.9	2	6.033	6.795
618	2	5.635	6.465
618.1	2	5.237	6.135
618.2	2	5.237	5.805
618.3	2	4.504	5.475
618.4	2	4.127	5.145
618.5	2	3.749	4.815
618.6	2	3.749	4.485
618.7	2	3.372	4.155
618.8	2	2.597	3.825
618.9	2	2.199	3.495
619	2	1.78	3.165
619.1	2	1.78	2.85
619.2	2	1.382	2.55
619.3	2	0.503	2.25
619.4	2	0.272	1.95
619.5	2	0.272	1.65
619.6	2	0.23	1.35
619.7	2	0.209	1.05
619.8	2	0.126	0.75
619.9	2	0.126	0.45
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620.6	2	0.063	0
620.7	2	0.042	0
620.8	2	0.042	0

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621	2	0.042	0
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644.9	2	0.042	0
645	2	0.042	0
645.1	2	0.105	0.1
645.2	2	0.251	0.3
645.3	2	0.503	0.5
645.4	2	0.733	0.7
645.5	2	0.943	0.9
645.6	2	0.943	1.1
645.7	2	1.362	1.3
645.8	2	1.571	1.5
645.9	2	1.801	1.7
646	2	2.032	1.9
646.1	2	2.032	2.125
646.2	2	2.493	2.375
646.3	2	2.744	2.625
646.4	2	2.995	2.875
646.5	2	2.995	3.125
646.6	2	3.226	3.375
646.7	2	3.749	3.625
646.8	2	4.022	3.875
646.9	2	4.315	4.125
647	2	4.315	4.375
647.1	2	4.608	4.665
647.2	2	5.195	4.995
647.3	2	5.488	5.325
647.4	2	5.488	5.655
647.5	2	5.76	5.985
647.6	2	6.347	6.315
647.7	2	6.619	6.645
647.8	2	6.619	6.975

647.9	2	6.871	7.305
648	2	7.101	7.635
648.1	2	7.541	7.92
648.2	2	7.75	8.16
648.3	2	7.75	8.4
648.4	2	7.96	8.64
648.5	2	8.19	8.88
648.6	2	8.609	9.12
648.7	2	8.609	9.36
648.8	2	8.819	9.6
648.9	2	9.049	9.84
649	2	9.51	10.08
649.1	2	9.51	10.315
649.2	2	9.74	10.545
649.3	2	9.971	10.775
649.4	2	10.18	11.005
649.5	2	10.641	11.249
649.6	2	10.641	11.465
649.7	2	10.892	11.695
649.8	2	11.123	11.925
649.9	2	11.395	12.155
650	2	11.646	12.385
650.1	2	11.898	12.575
650.2	2	12.17	12.725
650.3	2	12.442	12.875
650.4	2	12.715	13.025
650.5	2	12.987	13.175
650.6	2	13.259	13.325
650.7	2	13.553	13.475
650.8	2	13.825	13.625
650.9	2	14.097	13.775
651	2	14.39	13.925
651.1	2	14.684	14.065
651.2	2	14.956	14.195
651.3	2	15.249	14.325
651.4	2	15.543	14.455
651.5	2	15.857	14.585
651.6	2	16.15	14.715
651.7	2	16.464	14.845
651.8	2	16.778	14.975
651.9	2	17.072	15.105
652	2	17.365	15.235
652.1	2	17.616	15.41
652.2	2	17.847	15.63
652.3	2	18.014	15.85

652.4	2	18.161	16.07
652.5	2	18.308	16.29
652.6	2	18.454	16.51
652.7	2	18.58	16.73
652.8	2	18.726	16.95
652.9	2	18.894	17.17
653	2	19.041	17.39
653.1	2	19.208	17.605
653.2	2	19.397	17.815
653.3	2	19.564	18.025
653.4	2	19.753	18.235
653.5	2	19.941	18.445
653.6	2	20.151	18.655
653.7	2	20.36	18.865
653.8	2	20.549	19.075
653.9	2	20.758	19.285
654	2	20.947	19.495
654.1	2	21.135	19.67
654.2	2	21.324	19.81
654.3	2	21.324	19.95
654.4	2	21.68	20.09
654.5	2	21.848	20.23
654.6	2	21.994	20.37
654.7	2	21.994	20.51
654.8	2	22.329	20.65
654.9	2	22.497	20.79
655	2	22.664	20.93
655.1	2	22.811	21.06
655.2	2	22.811	21.18
655.3	2	23.083	21.3
655.4	2	23.188	21.42
655.5	2	23.314	21.54
655.6	2	23.419	21.66
655.7	2	23.419	21.78
655.8	2	23.712	21.9
655.9	2	23.879	22.02
656	2	24.026	22.14
656.1	2	24.026	22.255
656.2	2	24.152	22.365
656.3	2	24.34	22.475
656.4	2	24.403	22.585
656.5	2	24.403	22.695
656.6	2	24.466	22.805
656.7	2	24.55	22.915
656.8	2	24.571	23.025

656.9	2	24.571	23.135
657	2	24.571	23.245
657.1	2	24.55	23.36
657.2	2	24.529	23.48
657.3	2	24.529	23.6
657.4	2	24.529	23.72
657.5	2	24.55	23.84
657.6	2	24.592	23.96
657.7	2	24.675	24.08
657.8	2	24.675	24.2
657.9	2	24.738	24.32
658	2	24.801	24.44
658.1	2	24.864	24.54
658.2	2	25.01	24.62
658.3	2	25.01	24.7
658.4	2	25.094	24.78
658.5	2	25.178	24.86
658.6	2	25.346	24.94
658.7	2	25.346	25.02
658.8	2	25.429	25.1
658.9	2	25.492	25.18
659	2	25.576	25.26
659.1	2	25.639	25.315
659.2	2	25.702	25.345
659.3	2	25.744	25.375
659.4	2	25.806	25.405
659.5	2	25.848	25.435
659.6	2	25.911	25.465
659.7	2	25.953	25.495
659.8	2	25.974	25.525
659.9	2	25.995	25.555
660	2	25.995	25.585
660.1	2	25.995	25.62
660.2	2	25.974	25.66
660.3	2	25.953	25.7
660.4	2	25.911	25.74
660.5	2	25.869	25.78
660.6	2	25.827	25.82
660.7	2	25.806	25.86
660.8	2	25.765	25.9
660.9	2	25.723	25.94
661	2	25.702	25.98
661.1	2	25.702	26.005
661.2	2	25.702	26.015
661.3	2	25.744	26.025



661.4	2	25.786	26.035
661.5	2	25.827	26.045
661.6	2	25.869	26.055
661.7	2	25.932	26.065
661.8	2	25.974	26.075
661.9	2	26.016	26.085
662	2	26.058	26.095
662.1	2	26.1	26.105
662.2	2	26.121	26.115
662.3	2	26.163	26.125
662.4	2	26.204	26.135
662.5	2	26.225	26.145
662.6	2	26.267	26.155
662.7	2	26.309	26.165
662.8	2	26.351	26.175
662.9	2	26.372	26.185
663	2	26.372	26.195
663.1	2	26.372	26.2
663.2	2	26.372	26.2
663.3	2	26.351	26.2
663.4	2	26.309	26.2
663.5	2	26.267	26.2
663.6	2	26.204	26.2
663.7	2	26.163	26.2
663.8	2	26.1	26.2
663.9	2	26.058	26.2
664	2	26.016	26.2
664.1	2	25.995	26.21
664.2	2	25.995	26.23
664.3	2	25.995	26.25
664.4	2	25.995	26.27
664.5	2	25.995	26.29
664.6	2	25.995	26.31
664.7	2	25.974	26.33
664.8	2	25.974	26.35
664.9	2	25.911	26.37
665	2	25.869	26.39
665.1	2	25.827	26.405
665.2	2	25.786	26.415
665.3	2	25.786	26.425
665.4	2	25.702	26.435
665.5	2	25.681	26.445
665.6	2	25.681	26.455
665.7	2	25.681	26.465
665.8	2	25.723	26.475

665.9	2	25.827	26.485
666	2	25.89	26.495
666.1	2	25.89	26.5
666.2	2	25.932	26.5
666.3	2	26.037	26.5
666.4	2	26.079	26.5
666.5	2	26.079	26.5
666.6	2	26.121	26.5
666.7	2	26.184	26.5
666.8	2	26.246	26.5
666.9	2	26.288	26.5
667	2	26.288	26.5
667.1	2	26.288	26.475
667.2	2	26.288	26.425
667.3	2	26.225	26.375
667.4	2	26.225	26.325
667.5	2	26.142	26.275
667.6	2	26.079	26.225
667.7	2	26.016	26.175
667.8	2	26.016	26.125
667.9	2	25.848	26.075
668	2	25.765	26.025
668.1	2	25.681	25.975
668.2	2	25.492	25.925
668.3	2	25.492	25.875
668.4	2	25.408	25.825
668.5	2	25.304	25.775
668.6	2	25.22	25.725
668.7	2	25.136	25.675
668.8	2	25.031	25.625
668.9	2	24.906	25.575
669	2	24.759	25.525
669.1	2	24.592	25.405
669.2	2	24.361	25.215
669.3	2	24.047	25.025
669.4	2	23.712	24.835
669.5	2	23.377	24.645
669.6	2	23.021	24.455
669.7	2	22.706	24.265
669.8	2	22.35	24.075
669.9	2	22.015	23.885
670	2	21.722	23.695
670.1	2	21.491	23.49
670.2	2	21.324	23.27
670.3	2	21.177	23.05

670.4	2	21.052	22.83
670.5	2	20.926	22.61
670.6	2	20.821	22.39
670.7	2	20.695	22.17
670.8	2	20.591	21.95
670.9	2	20.486	21.73
671	2	20.381	21.51
671.1	2	20.256	21.255
671.2	2	20.109	20.965
671.3	2	19.941	20.675
671.4	2	19.753	20.385
671.5	2	19.543	20.095
671.6	2	19.355	19.805
671.7	2	19.145	19.515
671.8	2	18.957	19.225
671.9	2	18.747	18.935
672	2	18.538	18.645
672.1	2	18.349	18.395
672.2	2	18.182	18.185
672.3	2	17.993	17.975
672.4	2	17.826	17.765
672.5	2	17.679	17.555
672.6	2	17.532	17.345
672.7	2	17.407	17.135
672.8	2	17.281	16.925
672.9	2	17.155	16.715
673	2	17.051	16.505
673.1	2	16.925	16.305
673.2	2	16.82	16.115
673.3	2	16.695	15.925
673.4	2	16.548	15.735
673.5	2	16.359	15.545
673.6	2	16.129	15.355
673.7	2	15.899	15.165
673.8	2	15.647	14.975
673.9	2	15.647	14.785
674	2	15.165	14.595
674.1	2	14.893	14.355
674.2	2	14.558	14.065
674.3	2	14.202	13.775
674.4	2	14.202	13.485
674.5	2	13.469	13.195
674.6	2	13.176	12.905
674.7	2	12.882	12.615
674.8	2	12.882	12.325

674.9	2	12.317	12.035
675	2	11.982	11.745
675.1	2	11.605	11.455
675.2	2	11.605	11.165
675.3	2	11.227	10.875
675.4	2	10.494	10.585
675.5	2	10.117	10.295
675.6	2	9.761	10.005
675.7	2	9.761	9.715
675.8	2	9.384	9.425
675.9	2	8.672	9.135
676	2	8.295	8.845
676.1	2	8.295	8.555
676.2	2	7.918	8.265
676.3	2	7.185	7.975
676.4	2	6.85	7.685
676.5	2	6.85	7.395
676.6	2	6.494	7.105
676.7	2	6.179	6.815
676.8	2	5.53	6.525
676.9	2	5.53	6.235
677	2	5.216	5.945
677.1	2	4.943	5.685
677.2	2	4.692	5.455
677.3	2	4.336	5.225
677.4	2	4.336	4.995
677.5	2	4.168	4.765
677.6	2	4.001	4.535
677.7	2	3.833	4.305
677.8	2	3.666	4.075
677.9	2	3.519	3.845
678	2	3.372	3.615
678.1	2	3.205	3.425
678.2	2	2.912	3.275
678.3	2	2.912	3.125
678.4	2	2.765	2.975
678.5	2	2.618	2.825
678.6	2	2.472	2.675
678.7	2	2.283	2.525
678.8	2	2.116	2.375
678.9	2	1.927	2.225
679	2	1.718	2.075
679.1	2	1.529	1.9
679.2	2	1.257	1.7
679.3	2	0.984	1.5

679.4	2	0.67	1.3
679.5	2	0.356	1.1
679.6	2	0.189	0.9
679.7	2	0.189	0.7
679.8	2	0.168	0.5
679.9	2	0.105	0.3
680	2	0.105	0.1
680.1	2	0.105	0
680.2	2	0.063	0
680.3	2	0.063	0
680.4	2	0.084	0
680.5	2	0.063	0
680.6	2	0.021	0
680.7	2	0.021	0
680.8	2	0.042	0
680.9	2	0.021	0
681	2	0.021	0
681.1	2	0.021	0
681.2	2	0	0
681.3	2	0	0
681.4	2	0	0
681.5	2	0	0
681.6	2	0	0
681.7	2	0	0
681.8	2	0	0
681.9	2	0	0
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682.1	2	0	0
682.2	2	0	0
682.3	2	0	0
682.4	2	0	0
682.5	2	0	0
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682.7	2	0	0
682.8	2	0	0
682.9	2	0	0
683	2	0	0
683.1	2	0	0
683.2	2	-0.021	0
683.3	2	-0.021	0
683.4	2	0	0
683.5	2	0	0
683.6	2	0	0
683.7	2	0	0
683.8	2	0	0

683.9	2	0	0
684	2	0	0
684.1	2	0	0
684.2	2	-0.021	0
684.3	2	-0.021	0
684.4	2	-0.021	0
684.5	2	0	0
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684.7	2	0	0
684.8	2	0	0
684.9	2	0	0
685	2	0	0
685.1	2	-0.021	0
685.2	2	0	0
685.3	2	0	0
685.4	2	-0.021	0
685.5	2	-0.021	0
685.6	2	-0.021	0
685.7	2	-0.021	0
685.8	2	0	0
685.9	2	-0.021	0
686	2	0	0
686.1	2	0	0
686.2	2	0	0
686.3	2	-0.021	0
686.4	2	-0.021	0
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686.6	2	0	0
686.7	2	-0.021	0
686.8	2	-0.021	0
686.9	2	-0.021	0
687	2	-0.021	0
687.1	2	-0.021	0
687.2	2	-0.021	0
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687.4	2	0	0
687.5	2	0	0
687.6	2	-0.021	0
687.7	2	0	0
687.8	2	-0.021	0
687.9	2	-0.021	0
688	2	0	0
688.1	2	0	0
688.2	2	0	0
688.3	2	-0.021	0

688.4	2	-0.021	0
688.5	2	-0.021	0
688.6	2	0	0
688.7	2	0	0
688.8	2	-0.021	0
688.9	2	-0.021	0
689	2	-0.021	0
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689.2	2	-0.021	0
689.3	2	-0.021	0
689.4	2	-0.021	0
689.5	2	-0.021	0
689.6	2	-0.021	0
689.7	2	0	0
689.8	2	-0.021	0
689.9	2	0	0
690	2	0	0
690.1	2	-0.021	0
690.2	2	0	0
690.3	2	0	0
690.4	2	-0.021	0
690.5	2	-0.021	0
690.6	2	-0.021	0
690.7	2	-0.021	0
690.8	2	-0.021	0
690.9	2	-0.021	0
691	2	-0.021	0
691.1	2	-0.021	0
691.2	2	-0.021	0
691.3	2	-0.021	0
691.4	2	-0.021	0
691.5	2	0	0
691.6	2	0	0
691.7	2	-0.021	0
691.8	2	-0.021	0
691.9	2	-0.021	0
692	2	-0.021	0
692.1	2	-0.021	0
692.2	2	-0.021	0
692.3	2	-0.021	0
692.4	2	-0.021	0
692.5	2	0	0
692.6	2	0	0
692.7	2	0	0
692.8	2	0	0

692.9	2	0.021	0
693	2	0.021	0
693.1	2	0.021	0.07
693.2	2	0.042	0.21
693.3	2	0.063	0.35
693.4	2	0.063	0.49
693.5	2	0.063	0.63
693.6	2	0.105	0.77
693.7	2	0.105	0.91
693.8	2	0.126	1.05
693.9	2	0.168	1.19
694	2	0.168	1.33
694.1	2	0.23	1.495
694.2	2	0.293	1.685
694.3	2	0.356	1.875
694.4	2	0.356	2.065
694.5	2	0.44	2.255
694.6	2	0.691	2.445
694.7	2	0.838	2.635
694.8	2	0.838	2.825
694.9	2	0.984	3.015
695	2	1.152	3.205
695.1	2	1.466	3.355
695.2	2	1.613	3.465
695.3	2	1.613	3.575
695.4	2	1.76	3.685
695.5	2	1.927	3.795
695.6	2	2.325	3.905
695.7	2	2.325	4.015
695.8	2	2.556	4.125
695.9	2	2.807	4.235
696	2	3.079	4.345
696.1	2	3.645	4.505
696.2	2	3.645	4.715
696.3	2	3.938	4.925
696.4	2	4.252	5.135
696.5	2	4.86	5.345
696.6	2	4.86	5.555
696.7	2	5.174	5.765
696.8	2	5.467	5.975
696.9	2	5.76	6.185
697	2	6.033	6.395
697.1	2	6.284	6.635
697.2	2	6.535	6.905
697.3	2	6.745	7.175



697.4	2	6.933	7.445
697.5	2	7.122	7.715
697.6	2	7.31	7.985
697.7	2	7.478	8.255
697.8	2	7.646	8.525
697.9	2	7.813	8.795
698	2	7.96	9.065
698.1	2	8.106	9.305
698.2	2	8.274	9.515
698.3	2	8.421	9.725
698.4	2	8.588	9.935
698.5	2	8.735	10.145
698.6	2	8.902	10.355
698.7	2	9.07	10.565
698.8	2	9.279	10.775
698.9	2	9.489	10.985
699	2	9.74	11.195
699.1	2	10.034	11.41
699.2	2	10.327	11.63
699.3	2	10.683	11.85
699.4	2	11.039	12.07
699.5	2	11.416	12.29
699.6	2	11.814	12.51
699.7	2	12.233	12.73
699.8	2	12.631	12.95
699.9	2	12.987	13.17
700	2	13.259	13.39
700.1	2	13.469	13.555
700.2	2	13.636	13.665
700.3	2	13.783	13.775
700.4	2	13.93	13.885
700.5	2	14.055	13.995
700.6	2	14.181	14.105
700.7	2	14.244	14.215
700.8	2	14.244	14.325
700.9	2	14.223	14.435
701	2	14.181	14.545
701.1	2	14.16	14.69
701.2	2	14.16	14.87
701.3	2	14.181	15.05
701.4	2	14.223	15.23
701.5	2	14.286	15.41
701.6	2	14.39	15.59
701.7	2	14.537	15.77
701.8	2	14.537	15.95

701.9	2	15.082	16.13
702	2	15.396	16.31
702.1	2	15.668	16.415
702.2	2	15.878	16.445
702.3	2	16.108	16.475
702.4	2	16.297	16.505
702.5	2	16.464	16.535
702.6	2	16.59	16.565
702.7	2	16.59	16.595
702.8	2	16.736	16.625
702.9	2	16.716	16.655
703	2	16.653	16.685
703.1	2	16.653	16.69
703.2	2	16.569	16.67
703.3	2	16.359	16.65
703.4	2	16.255	16.63
703.5	2	16.129	16.61
703.6	2	16.129	16.59
703.7	2	16.003	16.57
703.8	2	15.836	16.55
703.9	2	15.815	16.53
704	2	15.815	16.51
704.1	2	15.815	16.5
704.2	2	15.815	16.5
704.3	2	15.941	16.5
704.4	2	16.066	16.5
704.5	2	16.066	16.5
704.6	2	16.213	16.5
704.7	2	16.38	16.5
704.8	2	16.82	16.5
704.9	2	16.82	16.5
705	2	17.051	16.5
705.1	2	17.26	16.585
705.2	2	17.47	16.755
705.3	2	17.889	16.925
705.4	2	17.889	17.095
705.5	2	18.077	17.265
705.6	2	18.266	17.435
705.7	2	18.601	17.605
705.8	2	18.601	17.775
705.9	2	18.747	17.945
706	2	18.894	18.115
706.1	2	19.041	18.25
706.2	2	19.334	18.35
706.3	2	19.334	18.45

706.4	2	19.501	18.55
706.5	2	19.648	18.65
706.6	2	19.795	18.75
706.7	2	19.795	18.85
706.8	2	20.088	18.95
706.9	2	20.235	19.05
707	2	20.381	19.15
707.1	2	20.528	19.245
707.2	2	20.695	19.335
707.3	2	20.863	19.425
707.4	2	21.031	19.515
707.5	2	21.219	19.605
707.6	2	21.408	19.695
707.7	2	21.596	19.785
707.8	2	21.806	19.875
707.9	2	22.015	19.965
708	2	22.246	20.055
708.1	2	22.455	20.17
708.2	2	22.685	20.31
708.3	2	22.832	20.45
708.4	2	22.937	20.59
708.5	2	22.979	20.73
708.6	2	23	20.87
708.7	2	23	21.01
708.8	2	23	21.15
708.9	2	22.958	21.29
709	2	22.937	21.43
709.1	2	22.895	21.55
709.2	2	22.853	21.65
709.3	2	22.79	21.75
709.4	2	22.727	21.85
709.5	2	22.643	21.95
709.6	2	22.56	22.05
709.7	2	22.518	22.15
709.8	2	22.476	22.25
709.9	2	22.455	22.35
710	2	22.455	22.45
710.1	2	22.476	22.5
710.2	2	22.497	22.5
710.3	2	22.539	22.5
710.4	2	22.56	22.5
710.5	2	22.581	22.5
710.6	2	22.623	22.5
710.7	2	22.643	22.5
710.8	2	22.685	22.5

710.9	2	22.706	22.5
711	2	22.769	22.5
711.1	2	22.811	22.48
711.2	2	22.874	22.44
711.3	2	22.937	22.4
711.4	2	23	22.36
711.5	2	23	22.32
711.6	2	23.021	22.28
711.7	2	22.958	22.24
711.8	2	22.895	22.2
711.9	2	22.832	22.16
712	2	22.832	22.12
712.1	2	22.706	22.13
712.2	2	22.664	22.19
712.3	2	22.664	22.25
712.4	2	22.664	22.31
712.5	2	22.664	22.37
712.6	2	22.748	22.43
712.7	2	22.811	22.49
712.8	2	22.874	22.55
712.9	2	22.874	22.61
713	2	23.021	22.67
713.1	2	23.083	22.73
713.2	2	23.146	22.79
713.3	2	23.146	22.85
713.4	2	23.209	22.91
713.5	2	23.314	22.97
713.6	2	23.377	23.03
713.7	2	23.439	23.09
713.8	2	23.439	23.15
713.9	2	23.481	23.21
714	2	23.523	23.27
714.1	2	23.502	23.31
714.2	2	23.502	23.33
714.3	2	23.46	23.35
714.4	2	23.419	23.37
714.5	2	23.335	23.39
714.6	2	23.335	23.41
714.7	2	23.314	23.43
714.8	2	23.272	23.45
714.9	2	23.23	23.47
715	2	23.125	23.49
715.1	2	23.125	23.45
715.2	2	23.062	23.35
715.3	2	22.979	23.25

715.4	2	22.79	23.15
715.5	2	22.79	23.05
715.6	2	22.685	22.95
715.7	2	22.56	22.85
715.8	2	22.455	22.75
715.9	2	22.35	22.65
716	2	22.225	22.55
716.1	2	22.12	22.455
716.2	2	22.015	22.365
716.3	2	21.91	22.275
716.4	2	21.827	22.185
716.5	2	21.743	22.095
716.6	2	21.659	22.005
716.7	2	21.596	21.915
716.8	2	21.512	21.825
716.9	2	21.429	21.735
717	2	21.345	21.645
717.1	2	21.24	21.545
717.2	2	21.156	21.435
717.3	2	21.052	21.325
717.4	2	20.947	21.215
717.5	2	20.821	21.105
717.6	2	20.716	20.995
717.7	2	20.591	20.885
717.8	2	20.486	20.775
717.9	2	20.381	20.665
718	2	20.277	20.555
718.1	2	20.13	20.375
718.2	2	19.92	20.125
718.3	2	19.627	19.875
718.4	2	19.334	19.625
718.5	2	19.083	19.375
718.6	2	18.873	19.125
718.7	2	18.685	18.875
718.8	2	18.433	18.625
718.9	2	18.098	18.375
719	2	17.763	18.125
719.1	2	17.386	17.85
719.2	2	17.03	17.55
719.3	2	16.736	17.25
719.4	2	16.506	16.95
719.5	2	16.234	16.65
719.6	2	15.878	16.35
719.7	2	15.878	16.05
719.8	2	14.998	15.75

719.9	2	14.516	15.45
720	2	14.034	15.15
720.1	2	13.678	14.85
720.2	2	13.427	14.55
720.3	2	13.217	14.25
720.4	2	13.029	13.95
720.5	2	12.861	13.65
720.6	2	12.694	13.35
720.7	2	12.505	13.05
720.8	2	12.338	12.75
720.9	2	12.17	12.45
721	2	12.003	12.15
721.1	2	12.003	11.85
721.2	2	11.688	11.55
721.3	2	11.521	11.25
721.4	2	11.353	10.95
721.5	2	11.186	10.65
721.6	2	11.186	10.35
721.7	2	10.85	10.05
721.8	2	10.641	9.75
721.9	2	10.369	9.45
722	2	10.369	9.15
722.1	2	10.054	8.86
722.2	2	9.175	8.58
722.3	2	8.735	8.3
722.4	2	8.735	8.02
722.5	2	8.253	7.74
722.6	2	7.248	7.46
722.7	2	6.724	7.18
722.8	2	6.221	6.9
722.9	2	6.221	6.62
723	2	5.844	6.34
723.1	2	5.362	6.115
723.2	2	5.258	5.945
723.3	2	5.258	5.775
723.4	2	5.195	5.605
723.5	2	5.174	5.435
723.6	2	5.132	5.265
723.7	2	5.111	5.095
723.8	2	5.111	4.925
723.9	2	5.09	4.755
724	2	5.09	4.585
724.1	2	5.048	4.425
724.2	2	5.048	4.275
724.3	2	5.048	4.125

724.4	2	5.027	3.975
724.5	2	4.713	3.825
724.6	2	4.713	3.675
724.7	2	4.315	3.525
724.8	2	3.98	3.375
724.9	2	3.833	3.225
725	2	3.708	3.075
725.1	2	3.708	2.955
725.2	2	3.687	2.865
725.3	2	3.666	2.775
725.4	2	3.666	2.685
725.5	2	3.645	2.595
725.6	2	3.624	2.505
725.7	2	3.582	2.415
725.8	2	3.477	2.325
725.9	2	3.331	2.235
726	2	3.184	2.145
726.1	2	3.016	2.02
726.2	2	2.87	1.86
726.3	2	2.702	1.7
726.4	2	2.535	1.54
726.5	2	2.325	1.38
726.6	2	2.032	1.22
726.7	2	1.676	1.06
726.8	2	1.194	0.9
726.9	2	0.587	0.74
727	2	0.356	0.58
727.1	2	0.314	0.5
727.2	2	0.251	0.5
727.3	2	0.168	0.5
727.4	2	0.105	0.5
727.5	2	0.042	0.5
727.6	2	0.021	0.5
727.7	2	0.042	0.5
727.8	2	0.084	0.5
727.9	2	0.147	0.5
728	2	0.272	0.5
728.1	2	0.44	0.635
728.2	2	0.649	0.905
728.3	2	0.859	1.175
728.4	2	1.089	1.445
728.5	2	1.341	1.715
728.6	2	1.613	1.985
728.7	2	1.927	2.255
728.8	2	2.241	2.525

728.9	2	2.556	2.795
729	2	2.87	3.065
729.1	2	3.205	3.365
729.2	2	3.519	3.695
729.3	2	3.875	4.025
729.4	2	4.273	4.355
729.5	2	4.692	4.685
729.6	2	5.132	5.015
729.7	2	5.593	5.345
729.8	2	6.054	5.675
729.9	2	6.494	6.005
730	2	6.933	6.335
730.1	2	7.373	6.655
730.2	2	7.792	6.965
730.3	2	8.169	7.275
730.4	2	8.525	7.585
730.5	2	8.86	7.895
730.6	2	9.154	8.205
730.7	2	9.154	8.515
730.8	2	9.698	8.825
730.9	2	9.95	9.135
731	2	10.201	9.445
731.1	2	10.201	9.745
731.2	2	10.704	10.035
731.3	2	10.955	10.325
731.4	2	11.207	10.615
731.5	2	11.479	10.905
731.6	2	11.479	11.195
731.7	2	12.003	11.485
731.8	2	12.254	11.775
731.9	2	12.526	12.065
732	2	12.526	12.355
732.1	2	12.778	12.575
732.2	2	13.322	12.725
732.3	2	13.594	12.875
732.4	2	13.594	13.025
732.5	2	13.867	13.175
732.6	2	14.118	13.325
732.7	2	14.642	13.475
732.8	2	14.914	13.625
732.9	2	14.914	13.775
733	2	15.165	13.925
733.1	2	15.668	14.1
733.2	2	15.92	14.3
733.3	2	15.92	14.5



733.4	2	16.192	14.7
733.5	2	16.443	14.9
733.6	2	16.904	15.1
733.7	2	16.904	15.3
733.8	2	17.093	15.5
733.9	2	17.26	15.7
734	2	17.428	15.9
734.1	2	17.595	16.1
734.2	2	17.742	16.3
734.3	2	17.91	16.5
734.4	2	18.056	16.7
734.5	2	18.412	16.9
734.6	2	18.412	17.1
734.7	2	18.601	17.3
734.8	2	18.81	17.5
734.9	2	18.999	17.7
735	2	19.187	17.9
735.1	2	19.376	18.08
735.2	2	19.585	18.24
735.3	2	19.774	18.4
735.4	2	19.962	18.56
735.5	2	20.172	18.72
735.6	2	20.36	18.88
735.7	2	20.57	19.04
735.8	2	20.758	19.2
735.9	2	20.968	19.36
736	2	21.156	19.52
736.1	2	21.345	19.695
736.2	2	21.533	19.885
736.3	2	21.701	20.075
736.4	2	21.889	20.265
736.5	2	22.078	20.455
736.6	2	22.287	20.645
736.7	2	22.476	20.835
736.8	2	22.685	21.025
736.9	2	22.895	21.215
737	2	23.104	21.405
737.1	2	23.314	21.58
737.2	2	23.523	21.74
737.3	2	23.733	21.9
737.4	2	23.921	22.06
737.5	2	24.089	22.22
737.6	2	24.256	22.38
737.7	2	24.424	22.54
737.8	2	24.571	22.7

737.9	2	24.717	22.86
738	2	24.843	23.02
738.1	2	24.948	23.17
738.2	2	25.052	23.31
738.3	2	25.136	23.45
738.4	2	25.178	23.59
738.5	2	25.241	23.73
738.6	2	25.283	23.87
738.7	2	25.346	24.01
738.8	2	25.388	24.15
738.9	2	25.429	24.29
739	2	25.492	24.43
739.1	2	25.555	24.55
739.2	2	25.618	24.65
739.3	2	25.681	24.75
739.4	2	25.723	24.85
739.5	2	25.786	24.95
739.6	2	25.848	25.05
739.7	2	25.89	25.15
739.8	2	25.89	25.25
739.9	2	26.016	25.35
740	2	26.079	25.45
740.1	2	26.142	25.55
740.2	2	26.204	25.65
740.3	2	26.267	25.75
740.4	2	26.33	25.85
740.5	2	26.393	25.95
740.6	2	26.456	26.05
740.7	2	26.456	26.15
740.8	2	26.581	26.25
740.9	2	26.644	26.35
741	2	26.707	26.45
741.1	2	26.707	26.53
741.2	2	26.791	26.59
741.3	2	26.917	26.65
741.4	2	26.979	26.71
741.5	2	26.979	26.77
741.6	2	27.063	26.83
741.7	2	27.189	26.89
741.8	2	27.273	26.95
741.9	2	27.336	27.01
742	2	27.336	27.07
742.1	2	27.398	27.125
742.2	2	27.524	27.175
742.3	2	27.587	27.225

742.4	2	27.587	27.275
742.5	2	27.65	27.325
742.6	2	27.692	27.375
742.7	2	27.775	27.425
742.8	2	27.796	27.475
742.9	2	27.796	27.525
743	2	27.817	27.575
743.1	2	27.817	27.615
743.2	2	27.817	27.645
743.3	2	27.817	27.675
743.4	2	27.838	27.705
743.5	2	27.859	27.735
743.6	2	27.88	27.765
743.7	2	27.922	27.795
743.8	2	27.943	27.825
743.9	2	27.985	27.855
744	2	28.006	27.885
744.1	2	28.069	27.92
744.2	2	28.069	27.96
744.3	2	28.09	28
744.4	2	28.132	28.04
744.5	2	28.153	28.08
744.6	2	28.194	28.12
744.7	2	28.215	28.16
744.8	2	28.236	28.2
744.9	2	28.278	28.24
745	2	28.299	28.28
745.1	2	28.341	28.315
745.2	2	28.383	28.345
745.3	2	28.404	28.375
745.4	2	28.446	28.405
745.5	2	28.467	28.435
745.6	2	28.488	28.465
745.7	2	28.488	28.495
745.8	2	28.53	28.525
745.9	2	28.55	28.555
746	2	28.55	28.585
746.1	2	28.571	28.6
746.2	2	28.571	28.6
746.3	2	28.55	28.6
746.4	2	28.53	28.6
746.5	2	28.509	28.6
746.6	2	28.488	28.6
746.7	2	28.488	28.6
746.8	2	28.467	28.6

746.9	2	28.425	28.6
747	2	28.383	28.6
747.1	2	28.32	28.585
747.2	2	28.278	28.555
747.3	2	28.278	28.525
747.4	2	28.278	28.495
747.5	2	28.299	28.465
747.6	2	28.341	28.435
747.7	2	28.383	28.405
747.8	2	28.425	28.375
747.9	2	28.467	28.345
748	2	28.509	28.315
748.1	2	28.55	28.295
748.2	2	28.613	28.285
748.3	2	28.655	28.275
748.4	2	28.676	28.265
748.5	2	28.697	28.255
748.6	2	28.697	28.245
748.7	2	28.676	28.235
748.8	2	28.655	28.225
748.9	2	28.592	28.215
749	2	28.53	28.205
749.1	2	28.467	28.19
749.2	2	28.404	28.17
749.3	2	28.404	28.15
749.4	2	28.257	28.13
749.5	2	28.173	28.11
749.6	2	28.111	28.09
749.7	2	28.027	28.07
749.8	2	28.027	28.05
749.9	2	27.88	28.03
750	2	27.796	28.01
750.1	2	27.713	27.975
750.2	2	27.713	27.925
750.3	2	27.65	27.875
750.4	2	27.482	27.825
750.5	2	27.419	27.775
750.6	2	27.336	27.725
750.7	2	27.336	27.675
750.8	2	27.189	27.625
750.9	2	27.105	27.575
751	2	27.021	27.525
751.1	2	27.021	27.465
751.2	2	26.959	27.395
751.3	2	26.812	27.325

751.4	2	26.728	27.255
751.5	2	26.728	27.185
751.6	2	26.644	27.115
751.7	2	26.581	27.045
751.8	2	26.393	26.975
751.9	2	26.393	26.905
752	2	26.309	26.835
752.1	2	26.225	26.735
752.2	2	26.142	26.605
752.3	2	25.953	26.475
752.4	2	25.953	26.345
752.5	2	25.848	26.215
752.6	2	25.744	26.085
752.7	2	25.429	25.955
752.8	2	25.429	25.825
752.9	2	25.199	25.695
753	2	24.906	25.565
753.1	2	24.592	25.4
753.2	2	23.9	25.2
753.3	2	23.9	25
753.4	2	23.586	24.8
753.5	2	23.356	24.6
753.6	2	23.146	24.4
753.7	2	22.979	24.2
753.8	2	22.832	24
753.9	2	22.706	23.8
754	2	22.581	23.6
754.1	2	22.455	23.4
754.2	2	22.287	23.2
754.3	2	22.12	23
754.4	2	21.952	22.8
754.5	2	21.764	22.6
754.6	2	21.575	22.4
754.7	2	21.387	22.2
754.8	2	21.219	22
754.9	2	21.031	21.8
755	2	20.821	21.6
755.1	2	20.633	21.375
755.2	2	20.444	21.125
755.3	2	20.256	20.875
755.4	2	20.067	20.625
755.5	2	19.879	20.375
755.6	2	19.69	20.125
755.7	2	19.501	19.875
755.8	2	19.313	19.625

755.9	2	19.124	19.375
756	2	18.915	19.125
756.1	2	18.726	18.875
756.2	2	18.517	18.625
756.3	2	18.308	18.375
756.4	2	18.098	18.125
756.5	2	17.91	17.875
756.6	2	17.679	17.625
756.7	2	17.386	17.375
756.8	2	17.072	17.125
756.9	2	16.778	16.875
757	2	16.548	16.625
757.1	2	16.38	16.42
757.2	2	16.213	16.26
757.3	2	16.066	16.1
757.4	2	15.941	15.94
757.5	2	15.815	15.78
757.6	2	15.689	15.62
757.7	2	15.563	15.46
757.8	2	15.438	15.3
757.9	2	15.333	15.14
758	2	15.207	14.98
758.1	2	15.082	14.78
758.2	2	14.956	14.54
758.3	2	14.851	14.3
758.4	2	14.705	14.06
758.5	2	14.495	13.82
758.6	2	14.495	13.58
758.7	2	13.783	13.34
758.8	2	13.301	13.1
758.9	2	12.819	12.86
759	2	12.359	12.62
759.1	2	11.898	12.345
759.2	2	11.479	12.035
759.3	2	11.081	11.725
759.4	2	11.081	11.415
759.5	2	10.243	11.105
759.6	2	9.824	10.795
759.7	2	9.384	10.485
759.8	2	9.384	10.175
759.9	2	9.007	9.865
760	2	8.421	9.555
760.1	2	8.148	9.24
760.2	2	8.148	8.92
760.3	2	7.918	8.6

760.4	2	7.436	8.28
760.5	2	7.185	7.96
760.6	2	6.933	7.64
760.7	2	6.933	7.32
760.8	2	6.703	7
760.9	2	6.263	6.68
761	2	6.054	6.36
761.1	2	5.823	6.04
761.2	2	5.823	5.72
761.3	2	5.593	5.4
761.4	2	5.132	5.08
761.5	2	4.881	4.76
761.6	2	4.881	4.44
761.7	2	4.629	4.12
761.8	2	4.357	3.8
761.9	2	3.645	3.48
762	2	3.645	3.16
762.1	2	3.268	2.925
762.2	2	2.87	2.775
762.3	2	2.493	2.625
762.4	2	1.697	2.475
762.5	2	1.697	2.325
762.6	2	1.362	2.175
762.7	2	1.194	2.025
762.8	2	1.068	1.875
762.9	2	1.068	1.725
763	2	1.026	1.575
763.1	2	1.026	1.5
763.2	2	1.026	1.5
763.3	2	1.005	1.5
763.4	2	1.005	1.5
763.5	2	1.005	1.5
763.6	2	0.984	1.5
763.7	2	0.984	1.5
763.8	2	0.964	1.5
763.9	2	0.964	1.5
764	2	0.964	1.5
764.1	2	0.964	1.45
764.2	2	0.964	1.35
764.3	2	0.943	1.25
764.4	2	0.922	1.15
764.5	2	0.859	1.05
764.6	2	0.691	0.95
764.7	2	0.398	0.85
764.8	2	0.189	0.75

764.9	2	0.147	0.65
765	2	0.126	0.55
765.1	2	0.084	0.475
765.2	2	0.021	0.425
765.3	2	0.021	0.375
765.4	2	0.021	0.325
765.5	2	0.063	0.275
765.6	2	0.126	0.225
765.7	2	0.335	0.175
765.8	2	0.587	0.125
765.9	2	0.859	0.075
766	2	1.11	0.025
766.1	2	1.362	0.15
766.2	2	1.613	0.45
766.3	2	1.864	0.75
766.4	2	2.116	1.05
766.5	2	2.367	1.35
766.6	2	2.597	1.65
766.7	2	2.849	1.95
766.8	2	3.121	2.25
766.9	2	3.414	2.55
767	2	3.729	2.85
767.1	2	4.085	3.165
767.2	2	4.441	3.495
767.3	2	4.818	3.825
767.4	2	5.195	4.155
767.5	2	5.572	4.485
767.6	2	5.928	4.815
767.7	2	6.284	5.145
767.8	2	6.64	5.475
767.9	2	6.975	5.805
768	2	7.331	6.135
768.1	2	7.646	6.465
768.2	2	7.646	6.795
768.3	2	8.148	7.125
768.4	2	8.421	7.455
768.5	2	8.672	7.785
768.6	2	8.672	8.115
768.7	2	9.175	8.445
768.8	2	9.426	8.775
768.9	2	9.677	9.105
769	2	9.929	9.435
769.1	2	9.929	9.765
769.2	2	10.411	10.095
769.3	2	10.641	10.425



769.4	2	10.871	10.755
769.5	2	10.871	11.085
769.6	2	11.123	11.415
769.7	2	11.625	11.745
769.8	2	11.94	12.075
769.9	2	12.296	12.405
770	2	12.296	12.735
770.1	2	12.673	13.045
770.2	2	13.469	13.335
770.3	2	13.846	13.625
770.4	2	13.846	13.915
770.5	2	14.244	14.205
770.6	2	14.621	14.495
770.7	2	15.354	14.785
770.8	2	15.354	15.075
770.9	2	15.689	15.365
771	2	16.024	15.655
771.1	2	16.653	15.885
771.2	2	16.946	16.055
771.3	2	16.946	16.225
771.4	2	17.26	16.395
771.5	2	17.512	16.565
771.6	2	17.742	16.735
771.7	2	17.742	16.905
771.8	2	18.077	17.075
771.9	2	18.224	17.245
772	2	18.349	17.415
772.1	2	18.475	17.545
772.2	2	18.58	17.635
772.3	2	18.664	17.725
772.4	2	18.747	17.815
772.5	2	18.915	17.905
772.6	2	18.915	17.995
772.7	2	19.041	18.085
772.8	2	19.187	18.175
772.9	2	19.355	18.265
773	2	19.522	18.355
773.1	2	19.711	18.455
773.2	2	19.879	18.565
773.3	2	20.067	18.675
773.4	2	20.235	18.785
773.5	2	20.423	18.895
773.6	2	20.591	19.005
773.7	2	20.758	19.115
773.8	2	20.926	19.225

773.9	2	21.072	19.335
774	2	21.219	19.445
774.1	2	21.345	19.56
774.2	2	21.45	19.68
774.3	2	21.554	19.8
774.4	2	21.659	19.92
774.5	2	21.743	20.04
774.6	2	21.827	20.16
774.7	2	21.91	20.28
774.8	2	21.994	20.4
774.9	2	22.036	20.52
775	2	22.057	20.64
775.1	2	22.078	20.765
775.2	2	22.078	20.895
775.3	2	22.078	21.025
775.4	2	22.099	21.155
775.5	2	22.12	21.285
775.6	2	22.183	21.415
775.7	2	22.308	21.545
775.8	2	22.455	21.675
775.9	2	22.602	21.805
776	2	22.748	21.935
776.1	2	22.895	22.06
776.2	2	23.062	22.18
776.3	2	23.251	22.3
776.4	2	23.419	22.42
776.5	2	23.607	22.54
776.6	2	23.796	22.66
776.7	2	23.984	22.78
776.8	2	24.173	22.9
776.9	2	24.361	23.02
777	2	24.55	23.14
777.1	2	24.738	23.29
777.2	2	24.885	23.47
777.3	2	25.01	23.65
777.4	2	25.115	23.83
777.5	2	25.22	24.01
777.6	2	25.304	24.19
777.7	2	25.388	24.37
777.8	2	25.388	24.55
777.9	2	25.534	24.73
778	2	25.618	24.91
778.1	2	25.681	25.075
778.2	2	25.765	25.225
778.3	2	25.765	25.375

778.4	2	25.932	25.525
778.5	2	26.016	25.675
778.6	2	26.079	25.825
778.7	2	26.079	25.975
778.8	2	26.142	26.125
778.9	2	26.267	26.275
779	2	26.33	26.425
779.1	2	26.393	26.55
779.2	2	26.393	26.65
779.3	2	26.498	26.75
779.4	2	26.561	26.85
779.5	2	26.623	26.95
779.6	2	26.623	27.05
779.7	2	26.686	27.15
779.8	2	26.812	27.25
779.9	2	26.875	27.35
780	2	26.875	27.45
780.1	2	26.959	27.525
780.2	2	27.021	27.575
780.3	2	27.189	27.625
780.4	2	27.252	27.675
780.5	2	27.252	27.725
780.6	2	27.336	27.775
780.7	2	27.419	27.825
780.8	2	27.587	27.875
780.9	2	27.587	27.925
781	2	27.671	27.975
781.1	2	27.734	28.015
781.2	2	27.796	28.045
781.3	2	27.838	28.075
781.4	2	27.88	28.105
781.5	2	27.922	28.135
781.6	2	27.985	28.165
781.7	2	28.111	28.195
781.8	2	28.111	28.225
781.9	2	28.194	28.255
782	2	28.257	28.285
782.1	2	28.32	28.33
782.2	2	28.383	28.39
782.3	2	28.446	28.45
782.4	2	28.488	28.51
782.5	2	28.53	28.57
782.6	2	28.571	28.63
782.7	2	28.613	28.69
782.8	2	28.655	28.75

782.9	2	28.676	28.81
783	2	28.718	28.87
783.1	2	28.739	28.9
783.2	2	28.739	28.9
783.3	2	28.739	28.9
783.4	2	28.739	28.9
783.5	2	28.718	28.9
783.6	2	28.697	28.9
783.7	2	28.676	28.9
783.8	2	28.634	28.9
783.9	2	28.571	28.9
784	2	28.53	28.9
784.1	2	28.488	28.9
784.2	2	28.446	28.9
784.3	2	28.383	28.9
784.4	2	28.341	28.9
784.5	2	28.32	28.9
784.6	2	28.32	28.9
784.7	2	28.362	28.9
784.8	2	28.425	28.9
784.9	2	28.467	28.9
785	2	28.53	28.9
785.1	2	28.571	28.895
785.2	2	28.634	28.885
785.3	2	28.697	28.875
785.4	2	28.739	28.865
785.5	2	28.802	28.855
785.6	2	28.844	28.845
785.7	2	28.886	28.835
785.8	2	28.907	28.825
785.9	2	28.907	28.815
786	2	28.886	28.805
786.1	2	28.865	28.785
786.2	2	28.802	28.755
786.3	2	28.76	28.725
786.4	2	28.676	28.695
786.5	2	28.613	28.665
786.6	2	28.55	28.635
786.7	2	28.488	28.605
786.8	2	28.446	28.575
786.9	2	28.404	28.545
787	2	28.383	28.515
787.1	2	28.341	28.49
787.2	2	28.32	28.47
787.3	2	28.278	28.45

787.4	2	28.278	28.43
787.5	2	28.236	28.41
787.6	2	28.215	28.39
787.7	2	28.194	28.37
787.8	2	28.194	28.35
787.9	2	28.215	28.33
788	2	28.236	28.31
788.1	2	28.236	28.3
788.2	2	28.215	28.3
788.3	2	28.215	28.3
788.4	2	28.111	28.3
788.5	2	28.048	28.3
788.6	2	27.985	28.3
788.7	2	27.985	28.3
788.8	2	27.922	28.3
788.9	2	27.796	28.3
789	2	27.775	28.3
789.1	2	27.775	28.3
789.2	2	27.755	28.3
789.3	2	27.775	28.3
789.4	2	27.796	28.3
789.5	2	27.817	28.3
789.6	2	27.817	28.3
789.7	2	27.817	28.3
789.8	2	27.859	28.3
789.9	2	27.859	28.3
790	2	27.859	28.3
790.1	2	27.88	28.295
790.2	2	27.88	28.285
790.3	2	27.88	28.275
790.4	2	27.88	28.265
790.5	2	27.859	28.255
790.6	2	27.859	28.245
790.7	2	27.859	28.235
790.8	2	27.859	28.225
790.9	2	27.859	28.215
791	2	27.859	28.205
791.1	2	27.838	28.17
791.2	2	27.838	28.11
791.3	2	27.817	28.05
791.4	2	27.775	27.99
791.5	2	27.734	27.93
791.6	2	27.692	27.87
791.7	2	27.629	27.81
791.8	2	27.587	27.75

791.9	2	27.545	27.69
792	2	27.524	27.63
792.1	2	27.524	27.595
792.2	2	27.545	27.585
792.3	2	27.566	27.575
792.4	2	27.587	27.565
792.5	2	27.608	27.555
792.6	2	27.608	27.545
792.7	2	27.629	27.535
792.8	2	27.629	27.525
792.9	2	27.629	27.515
793	2	27.608	27.505
793.1	2	27.608	27.5
793.2	2	27.608	27.5
793.3	2	27.608	27.5
793.4	2	27.608	27.5
793.5	2	27.587	27.5
793.6	2	27.587	27.5
793.7	2	27.587	27.5
793.8	2	27.587	27.5
793.9	2	27.587	27.5
794	2	27.587	27.5
794.1	2	27.587	27.5
794.2	2	27.566	27.5
794.3	2	27.587	27.5
794.4	2	27.587	27.5
794.5	2	27.587	27.5
794.6	2	27.587	27.5
794.7	2	27.587	27.5
794.8	2	27.587	27.5
794.9	2	27.566	27.5
795	2	27.545	27.5
795.1	2	27.482	27.5
795.2	2	27.44	27.5
795.3	2	27.398	27.5
795.4	2	27.357	27.5
795.5	2	27.357	27.5
795.6	2	27.336	27.5
795.7	2	27.357	27.5
795.8	2	27.357	27.5
795.9	2	27.398	27.5
796	2	27.419	27.5
796.1	2	27.461	27.5
796.2	2	27.503	27.5
796.3	2	27.545	27.5

796.4	2	27.587	27.5
796.5	2	27.587	27.5
796.6	2	27.629	27.5
796.7	2	27.629	27.5
796.8	2	27.629	27.5
796.9	2	27.608	27.5
797	2	27.608	27.5
797.1	2	27.587	27.5
797.2	2	27.566	27.5
797.3	2	27.545	27.5
797.4	2	27.545	27.5
797.5	2	27.545	27.5
797.6	2	27.524	27.5
797.7	2	27.524	27.5
797.8	2	27.524	27.5
797.9	2	27.524	27.5
798	2	27.524	27.5
798.1	2	27.524	27.505
798.2	2	27.524	27.515
798.3	2	27.524	27.525
798.4	2	27.524	27.535
798.5	2	27.524	27.545
798.6	2	27.524	27.555
798.7	2	27.524	27.565
798.8	2	27.524	27.575
798.9	2	27.545	27.585
799	2	27.692	27.595
799.1	2	27.692	27.62
799.2	2	27.775	27.66
799.3	2	27.88	27.7
799.4	2	28.048	27.74
799.5	2	28.153	27.78
799.6	2	28.153	27.82
799.7	2	28.257	27.86
799.8	2	28.362	27.9
799.9	2	28.592	27.94
800	2	28.592	27.98
800.1	2	28.676	28.025
800.2	2	28.76	28.075
800.3	2	28.823	28.125
800.4	2	28.948	28.175
800.5	2	28.948	28.225
800.6	2	28.99	28.275
800.7	2	29.053	28.325
800.8	2	29.095	28.375

800.9	2	29.137	28.425
801	2	29.2	28.475
801.1	2	29.263	28.575
801.2	2	29.326	28.725
801.3	2	29.409	28.875
801.4	2	29.493	29.025
801.5	2	29.556	29.175
801.6	2	29.64	29.325
801.7	2	29.724	29.475
801.8	2	29.786	29.625
801.9	2	29.87	29.775
802	2	29.954	29.925
802.1	2	30.038	30.05
802.2	2	30.142	30.15
802.3	2	30.247	30.25
802.4	2	30.352	30.35
802.5	2	30.478	30.45
802.6	2	30.582	30.55
802.7	2	30.708	30.65
802.8	2	30.834	30.75
802.9	2	30.98	30.85
803	2	31.106	30.95
803.1	2	31.253	31.05
803.2	2	31.378	31.15
803.3	2	31.525	31.25
803.4	2	31.651	31.35
803.5	2	31.776	31.45
803.6	2	31.86	31.55
803.7	2	31.944	31.65
803.8	2	32.007	31.75
803.9	2	32.07	31.85
804	2	32.111	31.95
804.1	2	32.153	32.05
804.2	2	32.216	32.15
804.3	2	32.258	32.25
804.4	2	32.3	32.35
804.5	2	32.342	32.45
804.6	2	32.384	32.55
804.7	2	32.447	32.65
804.8	2	32.488	32.75
804.9	2	32.53	32.85
805	2	32.572	32.95
805.1	2	32.635	33
805.2	2	32.698	33
805.3	2	32.74	33



805.4	2	32.803	33
805.5	2	32.886	33
805.6	2	32.928	33
805.7	2	33.012	33
805.8	2	33.075	33
805.9	2	33.138	33
806	2	33.201	33
806.1	2	33.201	33.03
806.2	2	33.326	33.09
806.3	2	33.389	33.15
806.4	2	33.452	33.21
806.5	2	33.494	33.27
806.6	2	33.494	33.33
806.7	2	33.578	33.39
806.8	2	33.62	33.45
806.9	2	33.641	33.51
807	2	33.641	33.57
807.1	2	33.724	33.62
807.2	2	33.745	33.66
807.3	2	33.787	33.7
807.4	2	33.787	33.74
807.5	2	33.808	33.78
807.6	2	33.871	33.82
807.7	2	33.892	33.86
807.8	2	33.913	33.9
807.9	2	33.913	33.94
808	2	33.934	33.98
808.1	2	33.955	34.015
808.2	2	33.955	34.045
808.3	2	33.955	34.075
808.4	2	33.913	34.105
808.5	2	33.808	34.135
808.6	2	33.766	34.165
808.7	2	33.766	34.195
808.8	2	33.745	34.225
808.9	2	33.745	34.255
809	2	33.787	34.285
809.1	2	33.808	34.295
809.2	2	33.808	34.285
809.3	2	33.829	34.275
809.4	2	33.871	34.265
809.5	2	33.913	34.255
809.6	2	33.913	34.245
809.7	2	33.934	34.235
809.8	2	33.934	34.225

809.9	2	33.934	34.215
810	2	33.913	34.205
810.1	2	33.892	34.19
810.2	2	33.85	34.17
810.3	2	33.787	34.15
810.4	2	33.682	34.13
810.5	2	33.682	34.11
810.6	2	33.682	34.09
810.7	2	33.62	34.07
810.8	2	33.599	34.05
810.9	2	33.599	34.03
811	2	33.578	34.01
811.1	2	33.557	34
811.2	2	33.557	34
811.3	2	33.536	34
811.4	2	33.515	34
811.5	2	33.515	34
811.6	2	33.494	34
811.7	2	33.452	34
811.8	2	33.389	34
811.9	2	33.347	34
812	2	33.305	34
812.1	2	33.284	33.995
812.2	2	33.243	33.985
812.3	2	33.201	33.975
812.4	2	33.18	33.965
812.5	2	33.138	33.955
812.6	2	33.096	33.945
812.7	2	33.054	33.935
812.8	2	33.012	33.925
812.9	2	32.991	33.915
813	2	32.991	33.905
813.1	2	33.012	33.885
813.2	2	33.012	33.855
813.3	2	33.033	33.825
813.4	2	33.054	33.795
813.5	2	33.075	33.765
813.6	2	33.096	33.735
813.7	2	33.117	33.705
813.8	2	33.117	33.675
813.9	2	33.138	33.645
814	2	33.138	33.615
814.1	2	33.138	33.575
814.2	2	33.138	33.525
814.3	2	33.117	33.475

814.4	2	33.096	33.425
814.5	2	33.075	33.375
814.6	2	33.054	33.325
814.7	2	33.033	33.275
814.8	2	33.012	33.225
814.9	2	32.991	33.175
815	2	32.97	33.125
815.1	2	32.949	33.095
815.2	2	32.949	33.085
815.3	2	32.907	33.075
815.4	2	32.907	33.065
815.5	2	32.886	33.055
815.6	2	32.845	33.045
815.7	2	32.845	33.035
815.8	2	32.782	33.025
815.9	2	32.74	33.015
816	2	32.698	33.005
816.1	2	32.698	32.975
816.2	2	32.635	32.925
816.3	2	32.572	32.875
816.4	2	32.53	32.825
816.5	2	32.53	32.775
816.6	2	32.488	32.725
816.7	2	32.426	32.675
816.8	2	32.384	32.625
816.9	2	32.363	32.575
817	2	32.363	32.525
817.1	2	32.363	32.475
817.2	2	32.384	32.425
817.3	2	32.384	32.375
817.4	2	32.384	32.325
817.5	2	32.384	32.275
817.6	2	32.384	32.225
817.7	2	32.384	32.175
817.8	2	32.384	32.125
817.9	2	32.384	32.075
818	2	32.384	32.025
818.1	2	32.384	31.995
818.2	2	32.342	31.985
818.3	2	32.342	31.975
818.4	2	32.3	31.965
818.5	2	32.279	31.955
818.6	2	32.216	31.945
818.7	2	32.216	31.935
818.8	2	32.195	31.925

818.9	2	32.174	31.915
819	2	32.132	31.905
819.1	2	32.153	31.885
819.2	2	32.153	31.855
819.3	2	32.153	31.825
819.4	2	32.174	31.795
819.5	2	32.195	31.765
819.6	2	32.216	31.735
819.7	2	32.237	31.705
819.8	2	32.258	31.675
819.9	2	32.3	31.645
820	2	32.3	31.615
820.1	2	32.321	31.595
820.2	2	32.321	31.585
820.3	2	32.321	31.575
820.4	2	32.3	31.565
820.5	2	32.279	31.555
820.6	2	32.237	31.545
820.7	2	32.174	31.535
820.8	2	32.111	31.525
820.9	2	32.049	31.515
821	2	31.965	31.505
821.1	2	31.902	31.455
821.2	2	31.818	31.365
821.3	2	31.734	31.275
821.4	2	31.651	31.185
821.5	2	31.567	31.095
821.6	2	31.504	31.005
821.7	2	31.42	30.915
821.8	2	31.336	30.825
821.9	2	31.253	30.735
822	2	31.19	30.645
822.1	2	31.106	30.57
822.2	2	31.022	30.51
822.3	2	30.959	30.45
822.4	2	30.938	30.39
822.5	2	30.897	30.33
822.6	2	30.876	30.27
822.7	2	30.855	30.21
822.8	2	30.834	30.15
822.9	2	30.813	30.09
823	2	30.771	30.03
823.1	2	30.75	29.995
823.2	2	30.708	29.985
823.3	2	30.687	29.975

823.4	2	30.645	29.965
823.5	2	30.603	29.955
823.6	2	30.603	29.945
823.7	2	30.54	29.935
823.8	2	30.519	29.925
823.9	2	30.478	29.915
824	2	30.478	29.905
824.1	2	30.457	29.9
824.2	2	30.436	29.9
824.3	2	30.436	29.9
824.4	2	30.415	29.9
824.5	2	30.415	29.9
824.6	2	30.394	29.9
824.7	2	30.373	29.9
824.8	2	30.373	29.9
824.9	2	30.373	29.9
825	2	30.373	29.9
825.1	2	30.373	29.9
825.2	2	30.394	29.9
825.3	2	30.394	29.9
825.4	2	30.394	29.9
825.5	2	30.394	29.9
825.6	2	30.373	29.9
825.7	2	30.352	29.9
825.8	2	30.352	29.9
825.9	2	30.31	29.9
826	2	30.289	29.9
826.1	2	30.247	29.9
826.2	2	30.247	29.9
826.3	2	30.226	29.9
826.4	2	30.163	29.9
826.5	2	30.142	29.9
826.6	2	30.142	29.9
826.7	2	30.101	29.9
826.8	2	30.08	29.9
826.9	2	30.017	29.9
827	2	29.975	29.9
827.1	2	29.975	29.885
827.2	2	29.933	29.855
827.3	2	29.849	29.825
827.4	2	29.807	29.795
827.5	2	29.807	29.765
827.6	2	29.744	29.735
827.7	2	29.682	29.705
827.8	2	29.619	29.675

827.9	2	29.598	29.645
828	2	29.598	29.615
828.1	2	29.598	29.595
828.2	2	29.598	29.585
828.3	2	29.64	29.575
828.4	2	29.64	29.565
828.5	2	29.661	29.555
828.6	2	29.703	29.545
828.7	2	29.744	29.535
828.8	2	29.786	29.525
828.9	2	29.828	29.515
829	2	29.87	29.505
829.1	2	29.891	29.5
829.2	2	29.933	29.5
829.3	2	29.933	29.5
829.4	2	29.933	29.5
829.5	2	29.912	29.5
829.6	2	29.849	29.5
829.7	2	29.807	29.5
829.8	2	29.744	29.5
829.9	2	29.703	29.5
830	2	29.64	29.5
830.1	2	29.598	29.49
830.2	2	29.556	29.47
830.3	2	29.535	29.45
830.4	2	29.556	29.43
830.5	2	29.577	29.41
830.6	2	29.619	29.39
830.7	2	29.661	29.37
830.8	2	29.682	29.35
830.9	2	29.682	29.33
831	2	29.682	29.31
831.1	2	29.661	29.28
831.2	2	29.619	29.24
831.3	2	29.556	29.2
831.4	2	29.493	29.16
831.5	2	29.43	29.12
831.6	2	29.367	29.08
831.7	2	29.284	29.04
831.8	2	29.221	29
831.9	2	29.137	28.96
832	2	29.074	28.92
832.1	2	29.011	28.865
832.2	2	28.928	28.795
832.3	2	28.844	28.725

832.4	2	28.76	28.655
832.5	2	28.655	28.585
832.6	2	28.571	28.515
832.7	2	28.488	28.445
832.8	2	28.425	28.375
832.9	2	28.341	28.305
833	2	28.278	28.235
833.1	2	28.215	28.175
833.2	2	28.132	28.125
833.3	2	28.048	28.075
833.4	2	27.964	28.025
833.5	2	27.88	27.975
833.6	2	27.796	27.925
833.7	2	27.692	27.875
833.8	2	27.608	27.825
833.9	2	27.524	27.775
834	2	27.44	27.725
834.1	2	27.336	27.665
834.2	2	27.252	27.595
834.3	2	27.168	27.525
834.4	2	27.168	27.455
834.5	2	27	27.385
834.6	2	26.896	27.315
834.7	2	26.812	27.245
834.8	2	26.728	27.175
834.9	2	26.728	27.105
835	2	26.561	27.035
835.1	2	26.456	26.925
835.2	2	26.372	26.775
835.3	2	26.372	26.625
835.4	2	26.037	26.475
835.5	2	25.869	26.325
835.6	2	25.66	26.175
835.7	2	25.66	26.025
835.8	2	25.492	25.875
835.9	2	25.262	25.725
836	2	25.157	25.575
836.1	2	25.052	25.41
836.2	2	25.052	25.23
836.3	2	24.948	25.05
836.4	2	24.675	24.87
836.5	2	24.675	24.69
836.6	2	24.675	24.51
836.7	2	24.34	24.33
836.8	2	24.131	24.15

836.9	2	23.754	23.97
837	2	23.754	23.79
837.1	2	23.565	23.615
837.2	2	23.356	23.445
837.3	2	22.874	23.275
837.4	2	22.602	23.105
837.5	2	22.602	22.935
837.6	2	22.35	22.765
837.7	2	22.099	22.595
837.8	2	21.722	22.425
837.9	2	21.722	22.255
838	2	21.575	22.085
838.1	2	21.429	21.925
838.2	2	21.282	21.775
838.3	2	20.989	21.625
838.4	2	20.989	21.475
838.5	2	20.863	21.325
838.6	2	20.737	21.175
838.7	2	20.612	21.025
838.8	2	20.465	20.875
838.9	2	20.339	20.725
839	2	20.193	20.575
839.1	2	20.067	20.435
839.2	2	19.941	20.305
839.3	2	19.816	20.175
839.4	2	19.711	20.045
839.5	2	19.606	19.915
839.6	2	19.501	19.785
839.7	2	19.418	19.655
839.8	2	19.313	19.525
839.9	2	19.25	19.395
840	2	19.187	19.265
840.1	2	19.145	19.2
840.2	2	19.124	19.2
840.3	2	19.103	19.2
840.4	2	19.103	19.2
840.5	2	19.103	19.2
840.6	2	19.103	19.2
840.7	2	19.103	19.2
840.8	2	19.124	19.2
840.9	2	19.145	19.2
841	2	19.187	19.2
841.1	2	19.271	19.245
841.2	2	19.355	19.335
841.3	2	19.46	19.425



841.4	2	19.543	19.515
841.5	2	19.648	19.605
841.6	2	19.774	19.695
841.7	2	19.879	19.785
841.8	2	19.983	19.875
841.9	2	20.109	19.965
842	2	20.235	20.055
842.1	2	20.339	20.14
842.2	2	20.465	20.22
842.3	2	20.591	20.3
842.4	2	20.695	20.38
842.5	2	20.8	20.46
842.6	2	20.884	20.54
842.7	2	20.926	20.62
842.8	2	20.947	20.7
842.9	2	20.947	20.78
843	2	20.947	20.86
843.1	2	20.968	20.925
843.2	2	21.01	20.975
843.3	2	21.072	21.025
843.4	2	21.135	21.075
843.5	2	21.219	21.125
843.6	2	21.282	21.175
843.7	2	21.366	21.225
843.8	2	21.429	21.275
843.9	2	21.491	21.325
844	2	21.491	21.375
844.1	2	21.638	21.43
844.2	2	21.743	21.49
844.3	2	21.848	21.55
844.4	2	21.848	21.61
844.5	2	21.952	21.67
844.6	2	22.12	21.73
844.7	2	22.204	21.79
844.8	2	22.287	21.85
844.9	2	22.287	21.91
845	2	22.455	21.97
845.1	2	22.518	22.03
845.2	2	22.581	22.09
845.3	2	22.581	22.15
845.4	2	22.643	22.21
845.5	2	22.706	22.27
845.6	2	22.706	22.33
845.7	2	22.727	22.39
845.8	2	22.727	22.45

845.9	2	22.727	22.51
846	2	22.727	22.57
846.1	2	22.727	22.63
846.2	2	22.727	22.69
846.3	2	22.727	22.75
846.4	2	22.748	22.81
846.5	2	22.79	22.87
846.6	2	22.79	22.93
846.7	2	22.832	22.99
846.8	2	22.874	23.05
846.9	2	22.979	23.11
847	2	23.041	23.17
847.1	2	23.041	23.24
847.2	2	23.104	23.32
847.3	2	23.167	23.4
847.4	2	23.335	23.48
847.5	2	23.335	23.56
847.6	2	23.419	23.64
847.7	2	23.523	23.72
847.8	2	23.649	23.8
847.9	2	23.775	23.88
848	2	23.921	23.96
848.1	2	24.047	24.05
848.2	2	24.215	24.15
848.3	2	24.361	24.25
848.4	2	24.508	24.35
848.5	2	24.633	24.45
848.6	2	24.759	24.55
848.7	2	24.885	24.65
848.8	2	24.969	24.75
848.9	2	25.073	24.85
849	2	25.157	24.95
849.1	2	25.22	25.05
849.2	2	25.304	25.15
849.3	2	25.367	25.25
849.4	2	25.408	25.35
849.5	2	25.471	25.45
849.6	2	25.471	25.55
849.7	2	25.576	25.65
849.8	2	25.618	25.75
849.9	2	25.66	25.85
850	2	25.681	25.95
850.1	2	25.723	26.03
850.2	2	25.786	26.09
850.3	2	25.848	26.15

850.4	2	25.89	26.21
850.5	2	25.953	26.27
850.6	2	26.016	26.33
850.7	2	26.079	26.39
850.8	2	26.142	26.45
850.9	2	26.204	26.51
851	2	26.246	26.57
851.1	2	26.309	26.6
851.2	2	26.351	26.6
851.3	2	26.393	26.6
851.4	2	26.435	26.6
851.5	2	26.456	26.6
851.6	2	26.477	26.6
851.7	2	26.519	26.6
851.8	2	26.54	26.6
851.9	2	26.561	26.6
852	2	26.602	26.6
852.1	2	26.644	26.61
852.2	2	26.665	26.63
852.3	2	26.707	26.65
852.4	2	26.749	26.67
852.5	2	26.791	26.69
852.6	2	26.833	26.71
852.7	2	26.875	26.73
852.8	2	26.917	26.75
852.9	2	26.959	26.77
853	2	27	26.79
853.1	2	27.042	26.81
853.2	2	27.063	26.83
853.3	2	27.105	26.85
853.4	2	27.147	26.87
853.5	2	27.189	26.89
853.6	2	27.189	26.91
853.7	2	27.252	26.93
853.8	2	27.273	26.95
853.9	2	27.273	26.97
854	2	27.273	26.99
854.1	2	27.273	27.01
854.2	2	27.252	27.03
854.3	2	27.252	27.05
854.4	2	27.231	27.07
854.5	2	27.231	27.09
854.6	2	27.252	27.11
854.7	2	27.273	27.13
854.8	2	27.273	27.15

854.9	2	27.273	27.17
855	2	27.294	27.19
855.1	2	27.377	27.23
855.2	2	27.419	27.29
855.3	2	27.419	27.35
855.4	2	27.461	27.41
855.5	2	27.524	27.47
855.6	2	27.629	27.53
855.7	2	27.671	27.59
855.8	2	27.671	27.65
855.9	2	27.734	27.71
856	2	27.775	27.77
856.1	2	27.88	27.815
856.2	2	27.88	27.845
856.3	2	27.943	27.875
856.4	2	27.985	27.905
856.5	2	28.048	27.935
856.6	2	28.132	27.965
856.7	2	28.132	27.995
856.8	2	28.173	28.025
856.9	2	28.215	28.055
857	2	28.278	28.085
857.1	2	28.278	28.135
857.2	2	28.299	28.205
857.3	2	28.32	28.275
857.4	2	28.32	28.345
857.5	2	28.32	28.415
857.6	2	28.32	28.485
857.7	2	28.32	28.555
857.8	2	28.341	28.625
857.9	2	28.341	28.695
858	2	28.362	28.765
858.1	2	28.383	28.805
858.2	2	28.404	28.815
858.3	2	28.425	28.825
858.4	2	28.446	28.835
858.5	2	28.488	28.845
858.6	2	28.55	28.855
858.7	2	28.613	28.865
858.8	2	28.676	28.875
858.9	2	28.739	28.885
859	2	28.802	28.895
859.1	2	28.865	28.905
859.2	2	28.907	28.915
859.3	2	28.948	28.925

859.4	2	28.99	28.935
859.5	2	29.032	28.945
859.6	2	29.074	28.955
859.7	2	29.095	28.965
859.8	2	29.095	28.975
859.9	2	29.095	28.985
860	2	29.074	28.995
860.1	2	29.053	29.005
860.2	2	29.032	29.015
860.3	2	29.011	29.025
860.4	2	29.011	29.035
860.5	2	28.99	29.045
860.6	2	28.969	29.055
860.7	2	28.948	29.065
860.8	2	28.948	29.075
860.9	2	28.928	29.085
861	2	28.907	29.095
861.1	2	28.886	29.095
861.2	2	28.886	29.085
861.3	2	28.865	29.075
861.4	2	28.865	29.065
861.5	2	28.886	29.055
861.6	2	28.907	29.045
861.7	2	28.948	29.035
861.8	2	28.948	29.025
861.9	2	28.948	29.015
862	2	28.928	29.005
862.1	2	28.886	28.955
862.2	2	28.823	28.865
862.3	2	28.76	28.775
862.4	2	28.676	28.685
862.5	2	28.676	28.595
862.6	2	28.509	28.505
862.7	2	28.509	28.415
862.8	2	28.341	28.325
862.9	2	28.236	28.235
863	2	28.153	28.145
863.1	2	28.069	28.07
863.2	2	28.069	28.01
863.3	2	27.88	27.95
863.4	2	27.817	27.89
863.5	2	27.734	27.83
863.6	2	27.734	27.77
863.7	2	27.587	27.71
863.8	2	27.524	27.65

863.9	2	27.44	27.59
864	2	27.44	27.53
864.1	2	27.377	27.475
864.2	2	27.231	27.425
864.3	2	27.168	27.375
864.4	2	27.105	27.325
864.5	2	27.105	27.275
864.6	2	27.021	27.225
864.7	2	26.854	27.175
864.8	2	26.77	27.125
864.9	2	26.77	27.075
865	2	26.665	27.025
865.1	2	26.498	26.94
865.2	2	26.414	26.82
865.3	2	26.414	26.7
865.4	2	26.33	26.58
865.5	2	26.225	26.46
865.6	2	26.058	26.34
865.7	2	26.058	26.22
865.8	2	25.974	26.1
865.9	2	25.89	25.98
866	2	25.806	25.86
866.1	2	25.618	25.76
866.2	2	25.618	25.68
866.3	2	25.534	25.6
866.4	2	25.471	25.52
866.5	2	25.388	25.44
866.6	2	25.388	25.36
866.7	2	25.346	25.28
866.8	2	25.304	25.2
866.9	2	25.262	25.12
867	2	25.22	25.04
867.1	2	25.178	24.975
867.2	2	25.136	24.925
867.3	2	25.115	24.875
867.4	2	25.073	24.825
867.5	2	25.052	24.775
867.6	2	25.01	24.725
867.7	2	24.99	24.675
867.8	2	24.969	24.625
867.9	2	24.948	24.575
868	2	24.969	24.525
868.1	2	24.99	24.515
868.2	2	25.031	24.545
868.3	2	25.073	24.575

868.4	2	25.136	24.605
868.5	2	25.199	24.635
868.6	2	25.262	24.665
868.7	2	25.304	24.695
868.8	2	25.346	24.725
868.9	2	25.388	24.755
869	2	25.408	24.785
869.1	2	25.408	24.815
869.2	2	25.388	24.845
869.3	2	25.367	24.875
869.4	2	25.346	24.905
869.5	2	25.304	24.935
869.6	2	25.283	24.965
869.7	2	25.262	24.995
869.8	2	25.22	25.025
869.9	2	25.22	25.055
870	2	25.22	25.085
870.1	2	25.262	25.12
870.2	2	25.283	25.16
870.3	2	25.304	25.2
870.4	2	25.346	25.24
870.5	2	25.388	25.28
870.6	2	25.429	25.32
870.7	2	25.492	25.36
870.8	2	25.555	25.4
870.9	2	25.618	25.44
871	2	25.681	25.48
871.1	2	25.744	25.51
871.2	2	25.806	25.53
871.3	2	25.848	25.55
871.4	2	25.911	25.57
871.5	2	25.953	25.59
871.6	2	25.974	25.61
871.7	2	25.974	25.63
871.8	2	25.995	25.65
871.9	2	25.974	25.67
872	2	25.995	25.69
872.1	2	25.974	25.725
872.2	2	25.974	25.775
872.3	2	25.974	25.825
872.4	2	25.974	25.875
872.5	2	25.974	25.925
872.6	2	25.974	25.975
872.7	2	25.974	26.025
872.8	2	25.995	26.075

872.9	2	26.016	26.125
873	2	26.037	26.175
873.1	2	26.058	26.235
873.2	2	26.058	26.305
873.3	2	26.1	26.375
873.4	2	26.142	26.445
873.5	2	26.225	26.515
873.6	2	26.225	26.585
873.7	2	26.309	26.655
873.8	2	26.519	26.725
873.9	2	26.644	26.795
874	2	26.644	26.865
874.1	2	26.77	26.93
874.2	2	26.875	26.99
874.3	2	27.126	27.05
874.4	2	27.252	27.11
874.5	2	27.252	27.17
874.6	2	27.377	27.23
874.7	2	27.566	27.29
874.8	2	27.65	27.35
874.9	2	27.65	27.41
875	2	27.713	27.47
875.1	2	27.775	27.515
875.2	2	27.901	27.545
875.3	2	27.901	27.575
875.4	2	27.964	27.605
875.5	2	28.027	27.635
875.6	2	28.027	27.665
875.7	2	28.215	27.695
875.8	2	28.215	27.725
875.9	2	28.278	27.755
876	2	28.32	27.785
876.1	2	28.383	27.83
876.2	2	28.446	27.89
876.3	2	28.509	27.95
876.4	2	28.55	28.01
876.5	2	28.613	28.07
876.6	2	28.676	28.13
876.7	2	28.739	28.19
876.8	2	28.781	28.25
876.9	2	28.844	28.31
877	2	28.886	28.37
877.1	2	28.928	28.43
877.2	2	28.969	28.49
877.3	2	29.011	28.55



877.4	2	29.053	28.61
877.5	2	29.074	28.67
877.6	2	29.095	28.73
877.7	2	29.095	28.79
877.8	2	29.074	28.85
877.9	2	29.053	28.91
878	2	29.011	28.97
878.1	2	28.99	29.01
878.2	2	28.99	29.03
878.3	2	28.969	29.05
878.4	2	28.969	29.07
878.5	2	28.969	29.09
878.6	2	28.969	29.11
878.7	2	28.969	29.13
878.8	2	28.969	29.15
878.9	2	28.99	29.17
879	2	28.99	29.19
879.1	2	29.011	29.195
879.2	2	29.032	29.185
879.3	2	29.053	29.175
879.4	2	29.053	29.165
879.5	2	29.074	29.155
879.6	2	29.053	29.145
879.7	2	29.053	29.135
879.8	2	29.032	29.125
879.9	2	29.011	29.115
880	2	28.99	29.105
880.1	2	28.969	29.095
880.2	2	28.928	29.085
880.3	2	28.928	29.075
880.4	2	28.907	29.065
880.5	2	28.886	29.055
880.6	2	28.886	29.045
880.7	2	28.865	29.035
880.8	2	28.844	29.025
880.9	2	28.844	29.015
881	2	28.823	29.005
881.1	2	28.802	28.995
881.2	2	28.802	28.985
881.3	2	28.781	28.975
881.4	2	28.781	28.965
881.5	2	28.781	28.955
881.6	2	28.739	28.945
881.7	2	28.697	28.935
881.8	2	28.655	28.925

881.9	2	28.592	28.915
882	2	28.55	28.905
882.1	2	28.53	28.88
882.2	2	28.53	28.84
882.3	2	28.53	28.8
882.4	2	28.53	28.76
882.5	2	28.509	28.72
882.6	2	28.509	28.68
882.7	2	28.488	28.64
882.8	2	28.488	28.6
882.9	2	28.467	28.56
883	2	28.488	28.52
883.1	2	28.53	28.48
883.2	2	28.53	28.44
883.3	2	28.55	28.4
883.4	2	28.592	28.36
883.5	2	28.634	28.32
883.6	2	28.634	28.28
883.7	2	28.634	28.24
883.8	2	28.613	28.2
883.9	2	28.613	28.16
884	2	28.592	28.12
884.1	2	28.592	28.095
884.2	2	28.571	28.085
884.3	2	28.53	28.075
884.4	2	28.446	28.065
884.5	2	28.446	28.055
884.6	2	28.383	28.045
884.7	2	28.341	28.035
884.8	2	28.299	28.025
884.9	2	28.236	28.015
885	2	28.236	28.005
885.1	2	28.215	28
885.2	2	28.194	28
885.3	2	28.153	28
885.4	2	28.153	28
885.5	2	28.132	28
885.6	2	28.111	28
885.7	2	28.09	28
885.8	2	28.069	28
885.9	2	28.027	28
886	2	28.006	28
886.1	2	27.943	27.98
886.2	2	27.901	27.94
886.3	2	27.859	27.9

886.4	2	27.817	27.86
886.5	2	27.755	27.82
886.6	2	27.692	27.78
886.7	2	27.629	27.74
886.8	2	27.545	27.7
886.9	2	27.482	27.66
887	2	27.419	27.62
887.1	2	27.357	27.58
887.2	2	27.294	27.54
887.3	2	27.231	27.5
887.4	2	27.168	27.46
887.5	2	27.105	27.42
887.6	2	27.042	27.38
887.7	2	27	27.34
887.8	2	26.959	27.3
887.9	2	26.938	27.26
888	2	26.917	27.22
888.1	2	26.917	27.17
888.2	2	26.917	27.11
888.3	2	26.917	27.05
888.4	2	26.917	26.99
888.5	2	26.917	26.93
888.6	2	26.938	26.87
888.7	2	26.938	26.81
888.8	2	26.959	26.75
888.9	2	26.959	26.69
889	2	26.959	26.63
889.1	2	26.979	26.62
889.2	2	26.979	26.66
889.3	2	27	26.7
889.4	2	27.021	26.74
889.5	2	27.042	26.78
889.6	2	27.063	26.82
889.7	2	27.084	26.86
889.8	2	27.126	26.9
889.9	2	27.147	26.94
890	2	27.189	26.98
890.1	2	27.21	27.025
890.2	2	27.252	27.075
890.3	2	27.273	27.125
890.4	2	27.294	27.175
890.5	2	27.315	27.225
890.6	2	27.315	27.275
890.7	2	27.336	27.325
890.8	2	27.336	27.375

890.9	2	27.357	27.425
891	2	27.357	27.475
891.1	2	27.357	27.515
891.2	2	27.398	27.545
891.3	2	27.398	27.575
891.4	2	27.419	27.605
891.5	2	27.44	27.635
891.6	2	27.44	27.665
891.7	2	27.524	27.695
891.8	2	27.566	27.725
891.9	2	27.629	27.755
892	2	27.629	27.785
892.1	2	27.713	27.81
892.2	2	27.755	27.83
892.3	2	27.796	27.85
892.4	2	27.796	27.87
892.5	2	27.838	27.89
892.6	2	27.922	27.91
892.7	2	27.964	27.93
892.8	2	27.964	27.95
892.9	2	27.964	27.97
893	2	27.985	27.99
893.1	2	27.964	27.99
893.2	2	27.964	27.97
893.3	2	27.964	27.95
893.4	2	27.943	27.93
893.5	2	27.922	27.91
893.6	2	27.859	27.89
893.7	2	27.859	27.87
893.8	2	27.838	27.85
893.9	2	27.796	27.83
894	2	27.734	27.81
894.1	2	27.713	27.81
894.2	2	27.713	27.83
894.3	2	27.692	27.85
894.4	2	27.713	27.87
894.5	2	27.796	27.89
894.6	2	27.796	27.91
894.7	2	27.859	27.93
894.8	2	27.922	27.95
894.9	2	27.985	27.97
895	2	28.048	27.99
895.1	2	28.111	28
895.2	2	28.173	28
895.3	2	28.236	28

895.4	2	28.278	28
895.5	2	28.32	28
895.6	2	28.341	28
895.7	2	28.383	28
895.8	2	28.383	28
895.9	2	28.362	28
896	2	28.341	28
896.1	2	28.278	28
896.2	2	28.236	28
896.3	2	28.173	28
896.4	2	28.111	28
896.5	2	28.069	28
896.6	2	28.027	28
896.7	2	27.985	28
896.8	2	27.964	28
896.9	2	27.943	28
897	2	27.943	28
897.1	2	27.943	27.985
897.2	2	27.943	27.955
897.3	2	27.943	27.925
897.4	2	27.943	27.895
897.5	2	27.943	27.865
897.6	2	27.943	27.835
897.7	2	27.964	27.805
897.8	2	27.964	27.775
897.9	2	27.943	27.745
898	2	27.943	27.715
898.1	2	27.943	27.685
898.2	2	27.922	27.655
898.3	2	27.922	27.625
898.4	2	27.901	27.595
898.5	2	27.901	27.565
898.6	2	27.88	27.535
898.7	2	27.859	27.505
898.8	2	27.817	27.475
898.9	2	27.775	27.445
899	2	27.713	27.415
899.1	2	27.65	27.375
899.2	2	27.587	27.325
899.3	2	27.503	27.275
899.4	2	27.44	27.225
899.5	2	27.398	27.175
899.6	2	27.357	27.125
899.7	2	27.315	27.075
899.8	2	27.273	27.022

899.9	2	27.231	26.975
900	2	27.21	26.925
900.1	2	27.168	26.885
900.2	2	27.126	26.855
900.3	2	27.126	26.825
900.4	2	27.042	26.795
900.5	2	27	26.765
900.6	2	26.979	26.735
900.7	2	26.938	26.705
900.8	2	26.896	26.675
900.9	2	26.854	26.645
901	2	26.812	26.615
901.1	2	26.77	26.595
901.2	2	26.77	26.585
901.3	2	26.707	26.575
901.4	2	26.665	26.565
901.5	2	26.665	26.555
901.6	2	26.602	26.545
901.7	2	26.602	26.535
901.8	2	26.519	26.525
901.9	2	26.498	26.515
902	2	26.456	26.505
902.1	2	26.456	26.5
902.2	2	26.414	26.5
902.3	2	26.372	26.5
902.4	2	26.372	26.5
902.5	2	26.372	26.5
902.6	2	26.393	26.5
902.7	2	26.435	26.5
902.8	2	26.519	26.5
902.9	2	26.561	26.5
903	2	26.561	26.5
903.1	2	26.602	26.5
903.2	2	26.644	26.5
903.3	2	26.728	26.5
903.4	2	26.728	26.5
903.5	2	26.77	26.5
903.6	2	26.812	26.5
903.7	2	26.875	26.5
903.8	2	26.875	26.5
903.9	2	26.875	26.5
904	2	26.854	26.5
904.1	2	26.833	26.49
904.2	2	26.77	26.47
904.3	2	26.77	26.45

904.4	2	26.749	26.43
904.5	2	26.707	26.41
904.6	2	26.665	26.39
904.7	2	26.623	26.37
904.8	2	26.581	26.35
904.9	2	26.54	26.33
905	2	26.498	26.31
905.1	2	26.456	26.295
905.2	2	26.414	26.285
905.3	2	26.414	26.275
905.4	2	26.414	26.265
905.5	2	26.435	26.255
905.6	2	26.456	26.245
905.7	2	26.477	26.235
905.8	2	26.498	26.225
905.9	2	26.519	26.215
906	2	26.54	26.205
906.1	2	26.561	26.2
906.2	2	26.581	26.2
906.3	2	26.581	26.2
906.4	2	26.581	26.2
906.5	2	26.561	26.2
906.6	2	26.519	26.2
906.7	2	26.477	26.2
906.8	2	26.435	26.2
906.9	2	26.393	26.2
907	2	26.372	26.2
907.1	2	26.351	26.185
907.2	2	26.309	26.155
907.3	2	26.288	26.125
907.4	2	26.267	26.095
907.5	2	26.225	26.065
907.6	2	26.204	26.035
907.7	2	26.184	26.005
907.8	2	26.163	25.975
907.9	2	26.142	25.945
908	2	26.121	25.915
908.1	2	26.1	25.885
908.2	2	26.079	25.855
908.3	2	26.058	25.825
908.4	2	26.037	25.795
908.5	2	26.037	25.765
908.6	2	26.016	25.735
908.7	2	25.995	25.705
908.8	2	25.974	25.675

908.9	2	25.953	25.645
909	2	25.932	25.615
909.1	2	25.911	25.6
909.2	2	25.911	25.6
909.3	2	25.89	25.6
909.4	2	25.89	25.6
909.5	2	25.911	25.6
909.6	2	25.932	25.6
909.7	2	25.974	25.6
909.8	2	26.016	25.6
909.9	2	26.016	25.6
910	2	26.1	25.6
910.1	2	26.121	25.615
910.2	2	26.163	25.645
910.3	2	26.204	25.675
910.4	2	26.204	25.705
910.5	2	26.267	25.735
910.6	2	26.288	25.765
910.7	2	26.288	25.795
910.8	2	26.288	25.825
910.9	2	26.288	25.855
911	2	26.246	25.885
911.1	2	26.225	25.895
911.2	2	26.204	25.885
911.3	2	26.204	25.875
911.4	2	26.142	25.865
911.5	2	26.079	25.855
911.6	2	26.037	25.845
911.7	2	26.037	25.835
911.8	2	25.995	25.825
911.9	2	25.848	25.815
912	2	25.786	25.805
912.1	2	25.786	25.785
912.2	2	25.723	25.755
912.3	2	25.66	25.725
912.4	2	25.555	25.695
912.5	2	25.555	25.665
912.6	2	25.513	25.635
912.7	2	25.45	25.605
912.8	2	25.367	25.575
912.9	2	25.325	25.545
913	2	25.325	25.515
913.1	2	25.283	25.455
913.2	2	25.241	25.365
913.3	2	25.136	25.275



913.4	2	25.136	25.185
913.5	2	25.073	25.095
913.6	2	25.01	25.005
913.7	2	24.927	24.915
913.8	2	24.78	24.825
913.9	2	24.78	24.735
914	2	24.696	24.645
914.1	2	24.612	24.545
914.2	2	24.529	24.435
914.3	2	24.445	24.325
914.4	2	24.361	24.215
914.5	2	24.361	24.105
914.6	2	24.173	23.995
914.7	2	24.089	23.885
914.8	2	24.005	23.775
914.9	2	23.9	23.665
915	2	23.754	23.555
915.1	2	23.607	23.435
915.2	2	23.419	23.305
915.3	2	23.251	23.175
915.4	2	23.083	23.045
915.5	2	22.916	22.915
915.6	2	22.727	22.785
915.7	2	22.581	22.655
915.8	2	22.476	22.525
915.9	2	22.371	22.395
916	2	22.266	22.265
916.1	2	22.183	22.17
916.2	2	22.078	22.11
916.3	2	21.994	22.05
916.4	2	21.889	21.99
916.5	2	21.785	21.93
916.6	2	21.722	21.87
916.7	2	21.68	21.81
916.8	2	21.638	21.75
916.9	2	21.617	21.69
917	2	21.596	21.63
917.1	2	21.575	21.6
917.2	2	21.554	21.6
917.3	2	21.533	21.6
917.4	2	21.533	21.6
917.5	2	21.512	21.6
917.6	2	21.491	21.6
917.7	2	21.491	21.6
917.8	2	21.491	21.6

917.9	2	21.512	21.6
918	2	21.533	21.6
918.1	2	21.554	21.605
918.2	2	21.575	21.615
918.3	2	21.596	21.625
918.4	2	21.617	21.635
918.5	2	21.638	21.645
918.6	2	21.68	21.655
918.7	2	21.701	21.665
918.8	2	21.743	21.675
918.9	2	21.785	21.685
919	2	21.848	21.695
919.1	2	21.848	21.745
919.2	2	21.973	21.835
919.3	2	22.036	21.925
919.4	2	22.12	22.015
919.5	2	22.12	22.105
919.6	2	22.266	22.195
919.7	2	22.35	22.285
919.8	2	22.434	22.375
919.9	2	22.518	22.465
920	2	22.518	22.555
920.1	2	22.664	22.64
920.2	2	22.727	22.72
920.3	2	22.811	22.8
920.4	2	22.811	22.88
920.5	2	22.874	22.96
920.6	2	23.021	23.04
920.7	2	23.125	23.12
920.8	2	23.125	23.2
920.9	2	23.209	23.28
921	2	23.419	23.36
921.1	2	23.523	23.43
921.2	2	23.628	23.49
921.3	2	23.628	23.55
921.4	2	23.733	23.61
921.5	2	23.921	23.67
921.6	2	24.026	23.73
921.7	2	24.026	23.79
921.8	2	24.089	23.85
921.9	2	24.173	23.91
922	2	24.298	23.97
922.1	2	24.361	24.01
922.2	2	24.361	24.03
922.3	2	24.403	24.05

922.4	2	24.445	24.07
922.5	2	24.466	24.09
922.6	2	24.466	24.11
922.7	2	24.466	24.13
922.8	2	24.445	24.15
922.9	2	24.403	24.17
923	2	24.403	24.19
923.1	2	24.382	24.21
923.2	2	24.361	24.23
923.3	2	24.361	24.25
923.4	2	24.382	24.27
923.5	2	24.382	24.29
923.6	2	24.424	24.31
923.7	2	24.445	24.33
923.8	2	24.487	24.35
923.9	2	24.508	24.37
924	2	24.55	24.39
924.1	2	24.592	24.425
924.2	2	24.633	24.475
924.3	2	24.675	24.525
924.4	2	24.717	24.575
924.5	2	24.759	24.625
924.6	2	24.78	24.675
924.7	2	24.822	24.725
924.8	2	24.864	24.775
924.9	2	24.885	24.825
925	2	24.906	24.875
925.1	2	24.927	24.91
925.2	2	24.927	24.93
925.3	2	24.927	24.95
925.4	2	24.906	24.97
925.5	2	24.885	24.99
925.6	2	24.864	25.01
925.7	2	24.864	25.03
925.8	2	24.822	25.05
925.9	2	24.801	25.07
926	2	24.78	25.09
926.1	2	24.759	25.105
926.2	2	24.738	25.115
926.3	2	24.738	25.125
926.4	2	24.738	25.135
926.5	2	24.738	25.145
926.6	2	24.738	25.155
926.7	2	24.738	25.165
926.8	2	24.759	25.175

926.9	2	24.759	25.185
927	2	24.801	25.195
927.1	2	24.864	25.205
927.2	2	24.948	25.215
927.3	2	25.01	25.225
927.4	2	25.073	25.235
927.5	2	25.073	25.245
927.6	2	25.199	25.255
927.7	2	25.241	25.265
927.8	2	25.283	25.275
927.9	2	25.304	25.285
928	2	25.325	25.295
928.1	2	25.346	25.31
928.2	2	25.367	25.33
928.3	2	25.367	25.35
928.4	2	25.346	25.37
928.5	2	25.325	25.39
928.6	2	25.325	25.41
928.7	2	25.325	25.43
928.8	2	25.304	25.45
928.9	2	25.304	25.47
929	2	25.304	25.49
929.1	2	25.304	25.485
929.2	2	25.283	25.455
929.3	2	25.262	25.425
929.4	2	25.241	25.395
929.5	2	25.22	25.365
929.6	2	25.22	25.335
929.7	2	25.22	25.305
929.8	2	25.178	25.275
929.9	2	25.136	25.245
930	2	25.094	25.215
930.1	2	25.094	25.19
930.2	2	24.99	25.17
930.3	2	24.948	25.15
930.4	2	24.927	25.13
930.5	2	24.927	25.11
930.6	2	24.885	25.09
930.7	2	24.864	25.07
930.8	2	24.864	25.05
930.9	2	24.864	25.03
931	2	24.864	25.01
931.1	2	24.864	25
931.2	2	24.864	25
931.3	2	24.864	25

931.4	2	24.864	25
931.5	2	24.864	25
931.6	2	24.864	25
931.7	2	24.864	25
931.8	2	24.864	25
931.9	2	24.864	25
932	2	24.864	25
932.1	2	24.843	25
932.2	2	24.843	25
932.3	2	24.843	25
932.4	2	24.843	25
932.5	2	24.822	25
932.6	2	24.822	25
932.7	2	24.801	25
932.8	2	24.801	25
932.9	2	24.78	25
933	2	24.738	25
933.1	2	24.738	24.985
933.2	2	24.696	24.955
933.3	2	24.675	24.925
933.4	2	24.633	24.895
933.5	2	24.612	24.865
933.6	2	24.592	24.835
933.7	2	24.571	24.805
933.8	2	24.529	24.775
933.9	2	24.508	24.745
934	2	24.466	24.715
934.1	2	24.445	24.69
934.2	2	24.424	24.67
934.3	2	24.382	24.65
934.4	2	24.361	24.63
934.5	2	24.34	24.61
934.6	2	24.298	24.59
934.7	2	24.277	24.57
934.8	2	24.256	24.55
934.9	2	24.235	24.53
935	2	24.235	24.51
935.1	2	24.235	24.49
935.2	2	24.215	24.47
935.3	2	24.215	24.45
935.4	2	24.194	24.43
935.5	2	24.194	24.41
935.6	2	24.194	24.39
935.7	2	24.173	24.37
935.8	2	24.173	24.35

935.9	2	24.173	24.33
936	2	24.173	24.31
936.1	2	24.152	24.3
936.2	2	24.152	24.3
936.3	2	24.152	24.3
936.4	2	24.152	24.3
936.5	2	24.152	24.3
936.6	2	24.173	24.3
936.7	2	24.194	24.3
936.8	2	24.215	24.3
936.9	2	24.235	24.3
937	2	24.256	24.3
937.1	2	24.298	24.31
937.2	2	24.319	24.33
937.3	2	24.361	24.35
937.4	2	24.403	24.37
937.5	2	24.424	24.39
937.6	2	24.466	24.41
937.7	2	24.508	24.43
937.8	2	24.55	24.45
937.9	2	24.592	24.47
938	2	24.633	24.49
938.1	2	24.675	24.525
938.2	2	24.717	24.575
938.3	2	24.717	24.625
938.4	2	24.822	24.675
938.5	2	24.864	24.725
938.6	2	24.906	24.775
938.7	2	24.948	24.825
938.8	2	24.948	24.875
938.9	2	25.031	24.925
939	2	25.073	24.975
939.1	2	25.115	25
939.2	2	25.115	25
939.3	2	25.157	25
939.4	2	25.22	25
939.5	2	25.22	25
939.6	2	25.22	25
939.7	2	25.22	25
939.8	2	25.241	25
939.9	2	25.22	25
940	2	25.22	25
940.1	2	25.22	24.98
940.2	2	25.199	24.94
940.3	2	25.094	24.9

940.4	2	25.094	24.86
940.5	2	25.094	24.82
940.6	2	24.969	24.78
940.7	2	24.906	24.74
940.8	2	24.801	24.7
940.9	2	24.759	24.66
941	2	24.759	24.62
941.1	2	24.717	24.6
941.2	2	24.675	24.6
941.3	2	24.592	24.6
941.4	2	24.592	24.6
941.5	2	24.529	24.6
941.6	2	24.487	24.6
941.7	2	24.424	24.6
941.8	2	24.298	24.6
941.9	2	24.298	24.6
942	2	24.256	24.6
942.1	2	24.256	24.575
942.2	2	24.256	24.525
942.3	2	24.277	24.475
942.4	2	24.319	24.425
942.5	2	24.361	24.375
942.6	2	24.403	24.325
942.7	2	24.424	24.275
942.8	2	24.424	24.225
942.9	2	24.445	24.175
943	2	24.445	24.125
943.1	2	24.445	24.12
943.2	2	24.445	24.16
943.3	2	24.445	24.2
943.4	2	24.424	24.24
943.5	2	24.403	24.28
943.6	2	24.361	24.32
943.7	2	24.319	24.36
943.8	2	24.319	24.4
943.9	2	24.34	24.44
944	2	24.361	24.48
944.1	2	24.403	24.53
944.2	2	24.445	24.59
944.3	2	24.487	24.65
944.4	2	24.529	24.71
944.5	2	24.612	24.77
944.6	2	24.675	24.83
944.7	2	24.759	24.89
944.8	2	24.822	24.95

944.9	2	24.906	25.01
945	2	24.969	25.07
945.1	2	25.052	25.125
945.2	2	25.136	25.175
945.3	2	25.22	25.225
945.4	2	25.283	25.275
945.5	2	25.346	25.325
945.6	2	25.388	25.375
945.7	2	25.429	25.425
945.8	2	25.45	25.475
945.9	2	25.492	25.525
946	2	25.513	25.575
946.1	2	25.555	25.575
946.2	2	25.576	25.525
946.3	2	25.597	25.475
946.4	2	25.576	25.425
946.5	2	25.513	25.375
946.6	2	25.471	25.325
946.7	2	25.429	25.275
946.8	2	25.367	25.225
946.9	2	25.325	25.175
947	2	25.262	25.125
947.1	2	25.262	25.045
947.2	2	25.115	24.935
947.3	2	25.031	24.825
947.4	2	24.948	24.715
947.5	2	24.864	24.605
947.6	2	24.759	24.495
947.7	2	24.612	24.385
947.8	2	24.34	24.275
947.9	2	23.984	24.165
948	2	23.984	24.055
948.1	2	23.209	23.9
948.2	2	22.853	23.7
948.3	2	22.497	23.5
948.4	2	22.12	23.3
948.5	2	22.12	23.1
948.6	2	21.429	22.9
948.7	2	21.093	22.7
948.8	2	20.779	22.5
948.9	2	20.779	22.3
949	2	20.465	22.1
949.1	2	20.088	21.905
949.2	2	19.962	21.715
949.3	2	19.962	21.525



949.4	2	19.858	21.335
949.5	2	19.669	21.145
949.6	2	19.543	20.955
949.7	2	19.376	20.765
949.8	2	19.376	20.575
949.9	2	19.208	20.385
950	2	18.873	20.195
950.1	2	18.726	19.94
950.2	2	18.726	19.62
950.3	2	18.58	19.3
950.4	2	18.454	18.98
950.5	2	18.182	18.66
950.6	2	18.182	18.34
950.7	2	18.056	18.02
950.8	2	17.91	17.7
950.9	2	17.742	17.38
951	2	17.155	17.06
951.1	2	17.155	16.735
951.2	2	16.778	16.405
951.3	2	16.401	16.075
951.4	2	15.584	15.745
951.5	2	15.584	15.415
951.6	2	15.312	15.085
951.7	2	15.019	14.755
951.8	2	14.579	14.425
951.9	2	14.076	14.095
952	2	13.594	13.765
952.1	2	13.155	13.435
952.2	2	12.715	13.105
952.3	2	12.254	12.775
952.4	2	11.793	12.445
952.5	2	11.353	12.115
952.6	2	10.913	11.785
952.7	2	10.473	11.455
952.8	2	10.034	11.125
952.9	2	9.615	10.795
953	2	9.238	10.465
953.1	2	8.923	10.135
953.2	2	8.693	9.805
953.3	2	8.504	9.475
953.4	2	8.337	9.145
953.5	2	8.337	8.815
953.6	2	8.023	8.485
953.7	2	7.855	8.155
953.8	2	7.687	7.825

953.9	2	7.52	7.495
954	2	7.352	7.165
954.1	2	7.143	6.835
954.2	2	6.829	6.505
954.3	2	6.452	6.175
954.4	2	6.033	5.845
954.5	2	5.614	5.515
954.6	2	5.216	5.185
954.7	2	4.839	4.855
954.8	2	4.441	4.525
954.9	2	4.043	4.195
955	2	3.603	3.865
955.1	2	3.142	3.535
955.2	2	2.681	3.205
955.3	2	2.241	2.875
955.4	2	1.843	2.545
955.5	2	1.466	2.215
955.6	2	1.11	1.885
955.7	2	0.712	1.555
955.8	2	0.335	1.225
955.9	2	0.23	0.895
956	2	0.23	0.565
956.1	2	0.168	0.38
956.2	2	0.105	0.34
956.3	2	0.126	0.3
956.4	2	0.126	0.26
956.5	2	0.063	0.22
956.6	2	0.084	0.18
956.7	2	0.084	0.14
956.8	2	0.063	0.1
956.9	2	0.042	0.06
957	2	0.063	0.02
957.1	2	0.063	0
957.2	2	0.063	0
957.3	2	0.021	0
957.4	2	0.042	0
957.5	2	0	0
957.6	2	0.021	0
957.7	2	0.021	0
957.8	2	0.021	0
957.9	2	0	0
958	2	0	0
958.1	2	0	0
958.2	2	0	0
958.3	2	0.021	0

958.4	2	0.021	0
958.5	2	0.021	0
958.6	2	0.042	0
958.7	2	0.063	0
958.8	2	0.084	0
958.9	2	0.084	0
959	2	0.126	0
959.1	2	0.147	0.1
959.2	2	0.314	0.3
959.3	2	0.461	0.5
959.4	2	0.461	0.7
959.5	2	0.649	0.9
959.6	2	1.026	1.1
959.7	2	1.236	1.3
959.8	2	1.236	1.5
959.9	2	1.424	1.7
960	2	1.634	1.9
960.1	2	2.074	2.165
960.2	2	2.074	2.495
960.3	2	2.283	2.825
960.4	2	2.514	3.155
960.5	2	2.744	3.485
960.6	2	3.226	3.815
960.7	2	3.226	4.145
960.8	2	3.519	4.475
960.9	2	3.812	4.805
961	2	4.106	5.135
961.1	2	4.42	5.465
961.2	2	4.734	5.795
961.3	2	5.048	6.125
961.4	2	5.404	6.455
961.5	2	6.116	6.785
961.6	2	6.116	7.115
961.7	2	6.473	7.445
961.8	2	6.829	7.775
961.9	2	7.122	8.105
962	2	7.415	8.435
962.1	2	7.708	8.765
962.2	2	8.002	9.095
962.3	2	8.274	9.425
962.4	2	8.546	9.755
962.5	2	8.86	10.085
962.6	2	9.133	10.415
962.7	2	9.426	10.745
962.8	2	9.719	11.075

962.9	2	10.013	11.405
963	2	10.306	11.735
963.1	2	10.62	12.065
963.2	2	10.934	12.395
963.3	2	11.269	12.725
963.4	2	11.625	13.055
963.5	2	11.982	13.385
963.6	2	12.359	13.715
963.7	2	12.736	14.045
963.8	2	13.113	14.375
963.9	2	13.469	14.705
964	2	13.846	15.035
964.1	2	14.223	15.315
964.2	2	14.621	15.545
964.3	2	15.04	15.775
964.4	2	15.459	16.005
964.5	2	15.899	16.235
964.6	2	16.339	16.465
964.7	2	16.778	16.695
964.8	2	17.197	16.925
964.9	2	17.512	17.155
965	2	17.763	17.385
965.1	2	17.972	17.555
965.2	2	18.182	17.665
965.3	2	18.37	17.775
965.4	2	18.559	17.885
965.5	2	18.747	17.995
965.6	2	18.936	18.105
965.7	2	19.103	18.215
965.8	2	19.208	18.325
965.9	2	19.292	18.435
966	2	19.334	18.545
966.1	2	19.397	18.67
966.2	2	19.439	18.81
966.3	2	19.543	18.95
966.4	2	19.543	19.09
966.5	2	19.816	19.23
966.6	2	20.004	19.37
966.7	2	20.193	19.51
966.8	2	20.193	19.65
966.9	2	20.57	19.79
967	2	20.737	19.93
967.1	2	20.884	20.055
967.2	2	20.884	20.165
967.3	2	21.052	20.275

967.4	2	21.366	20.385
967.5	2	21.512	20.495
967.6	2	21.659	20.605
967.7	2	21.659	20.715
967.8	2	21.994	20.825
967.9	2	22.162	20.935
968	2	22.287	21.045
968.1	2	22.287	21.145
968.2	2	22.392	21.235
968.3	2	22.539	21.325
968.4	2	22.602	21.415
968.5	2	22.602	21.505
968.6	2	22.664	21.595
968.7	2	22.727	21.685
968.8	2	22.874	21.775
968.9	2	22.937	21.865
969	2	22.937	21.955
969.1	2	23	22.05
969.2	2	23.083	22.15
969.3	2	23.314	22.25
969.4	2	23.314	22.35
969.5	2	23.439	22.45
969.6	2	23.565	22.55
969.7	2	23.858	22.65
969.8	2	23.858	22.75
969.9	2	24.005	22.85
970	2	24.173	22.95
970.1	2	24.34	23.075
970.2	2	24.612	23.225
970.3	2	24.612	23.375
970.4	2	24.717	23.525
970.5	2	24.864	23.675
970.6	2	25.031	23.825
970.7	2	25.199	23.975
970.8	2	25.346	24.125
970.9	2	25.492	24.275
971	2	25.618	24.425
971.1	2	25.765	24.59
971.2	2	25.89	24.77
971.3	2	25.995	24.95
971.4	2	26.121	25.13
971.5	2	26.204	25.31
971.6	2	26.309	25.49
971.7	2	26.393	25.67
971.8	2	26.477	25.85

971.9	2	26.581	26.03
972	2	26.686	26.21
972.1	2	26.77	26.36
972.2	2	26.854	26.48
972.3	2	26.959	26.6
972.4	2	27.042	26.72
972.5	2	27.147	26.84
972.6	2	27.231	26.96
972.7	2	27.315	27.08
972.8	2	27.377	27.2
972.9	2	27.461	27.32
973	2	27.566	27.44
973.1	2	27.65	27.53
973.2	2	27.734	27.59
973.3	2	27.817	27.65
973.4	2	27.859	27.71
973.5	2	27.922	27.77
973.6	2	27.985	27.83
973.7	2	28.027	27.89
973.8	2	28.069	27.95
973.9	2	28.111	28.01
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974.2	2	28.215	28.145
974.3	2	28.257	28.175
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974.7	2	28.299	28.295
974.8	2	28.278	28.325
974.9	2	28.257	28.355
975	2	28.194	28.385
975.1	2	28.153	28.405
975.2	2	28.111	28.415
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1021.2	2	3.435	3.805
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1021.7	2	1.487	2.155
1021.8	2	1.089	1.825
1021.9	2	0.712	1.495
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1022.1	2	0.209	0.95
1022.2	2	0.189	0.85
1022.3	2	0.168	0.75
1022.4	2	0.084	0.65
1022.5	2	0.105	0.55
1022.6	2	0.105	0.45
1022.7	2	0.063	0.35
1022.8	2	0.042	0.25
1022.9	2	0.063	0.15
1023	2	0.063	0.05
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1052.3	2	0.021	0.3
1052.4	2	0.042	0.42
1052.5	2	0.063	0.54
1052.6	2	0.063	0.66
1052.7	2	0.063	0.78
1052.8	2	0.084	0.9

1052.9	2	0.147	1.02
1053	2	0.189	1.14
1053.1	2	0.272	1.34
1053.2	2	0.272	1.62
1053.3	2	0.44	1.9
1053.4	2	0.796	2.18
1053.5	2	1.005	2.46
1053.6	2	1.005	2.74
1053.7	2	1.215	3.02
1053.8	2	1.697	3.3
1053.9	2	1.969	3.58
1054	2	1.969	3.86
1054.1	2	2.262	4.165
1054.2	2	2.576	4.495
1054.3	2	3.205	4.825
1054.4	2	3.519	5.155
1054.5	2	3.519	5.485
1054.6	2	3.833	5.815
1054.7	2	4.189	6.145
1054.8	2	4.902	6.475
1054.9	2	4.902	6.805
1055	2	5.279	7.135
1055.1	2	5.656	7.465
1055.2	2	6.389	7.795
1055.3	2	6.389	8.125
1055.4	2	6.745	8.455
1055.5	2	7.08	8.785
1055.6	2	7.394	9.115
1055.7	2	7.981	9.445
1055.8	2	7.981	9.775
1055.9	2	8.253	10.105
1056	2	8.504	10.435
1056.1	2	8.756	10.765
1056.2	2	9.028	11.095
1056.3	2	9.3	11.425
1056.4	2	9.594	11.755
1056.5	2	9.929	12.085
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1056.7	2	10.62	12.745
1056.8	2	10.976	13.075
1056.9	2	11.353	13.405
1057	2	11.751	13.735
1057.1	2	12.17	14.055
1057.2	2	12.589	14.365
1057.3	2	13.05	14.675



1057.4	2	13.05	14.985
1057.5	2	13.951	15.295
1057.6	2	14.411	15.605
1057.7	2	14.893	15.915
1057.8	2	15.354	16.225
1057.9	2	15.836	16.535
1058	2	16.318	16.845
1058.1	2	16.799	17.075
1058.2	2	17.281	17.225
1058.3	2	17.763	17.375
1058.4	2	18.245	17.525
1058.5	2	18.622	17.675
1058.6	2	18.915	17.825
1058.7	2	19.145	17.975
1058.8	2	19.355	18.125
1058.9	2	19.543	18.275
1059	2	19.753	18.425
1059.1	2	19.962	18.575
1059.2	2	20.172	18.725
1059.3	2	20.402	18.875
1059.4	2	20.633	19.025
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1059.7	2	21.261	19.475
1059.8	2	21.408	19.625
1059.9	2	21.533	19.775
1060	2	21.659	19.925
1060.1	2	21.785	20.09
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1060.4	2	22.204	20.63
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1060.7	2	22.685	21.17
1060.8	2	22.853	21.35
1060.9	2	22.853	21.53
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1061.4	2	23.607	22.22
1061.5	2	23.649	22.34
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1061.7	2	23.691	22.58
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1062	2	23.858	22.94
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1062.6	2	24.026	23.55
1062.7	2	24.026	23.65
1062.8	2	24.068	23.75
1062.9	2	24.256	23.85
1063	2	24.382	23.95
1063.1	2	24.508	24.04
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1063.3	2	24.633	24.2
1063.4	2	24.885	24.28
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1063.7	2	25.094	24.525
1063.8	2	25.199	24.6
1063.9	2	25.388	24.68
1064	2	25.388	24.76
1064.1	2	25.45	24.84
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1064.3	2	25.639	25
1064.4	2	25.639	25.08
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1064.7	2	25.702	25.32
1064.8	2	25.723	25.4
1064.9	2	25.723	25.48
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1065.3	2	25.89	25.825
1065.4	2	25.932	25.915
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1065.7	2	26.163	26.185
1065.8	2	26.267	26.275
1065.9	2	26.372	26.365
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1066.9	2	27.419	26.755
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1067.6	2	27.859	27.13
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1067.8	2	27.88	27.25
1067.9	2	27.901	27.31
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1068.6	2	27.838	27.675
1068.7	2	27.817	27.725
1068.8	2	27.796	27.775
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1070.8	2	28.278	28.075

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1072.9	2	26.77	27.075
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1073.8	2	26.393	27
1073.9	2	26.372	27
1074	2	26.309	27
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1074.2	2	26.267	26.895
1074.3	2	26.225	26.825
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1074.8	2	25.932	26.475
1074.9	2	25.786	26.405
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1075.3	2	25.513	25.85

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1076.9	2	24.131	22.8
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1077.7	2	22.057	21.85
1077.8	2	21.973	21.75
1077.9	2	21.889	21.65
1078	2	21.785	21.55
1078.1	2	21.701	21.455
1078.2	2	21.596	21.365
1078.3	2	21.512	21.275
1078.4	2	21.408	21.185
1078.5	2	21.324	21.095
1078.6	2	21.24	21.005
1078.7	2	21.156	20.915
1078.8	2	21.052	20.825
1078.9	2	20.947	20.735
1079	2	20.821	20.645
1079.1	2	20.674	20.47
1079.2	2	20.549	20.21
1079.3	2	20.549	19.95
1079.4	2	20.297	19.69
1079.5	2	20.13	19.43
1079.6	2	19.983	19.17
1079.7	2	19.837	18.91
1079.8	2	19.69	18.65

1079.9	2	19.522	18.39
1080	2	19.355	18.13
1080.1	2	19.103	17.85
1080.2	2	19.103	17.55
1080.3	2	18.391	17.25
1080.4	2	18.014	16.95
1080.5	2	17.637	16.65
1080.6	2	17.637	16.35
1080.7	2	17.26	16.05
1080.8	2	16.506	15.75
1080.9	2	16.15	15.45
1081	2	15.794	15.15
1081.1	2	15.794	14.865
1081.2	2	15.04	14.595
1081.3	2	14.642	14.325
1081.4	2	14.244	14.055
1081.5	2	14.244	13.785
1081.6	2	13.93	13.515
1081.7	2	13.448	13.245
1081.8	2	13.259	12.975
1081.9	2	13.259	12.705
1082	2	13.071	12.435
1082.1	2	12.882	12.24
1082.2	2	12.61	12.12
1082.3	2	12.505	12
1082.4	2	12.505	11.88
1082.5	2	12.401	11.76
1082.6	2	12.317	11.64
1082.7	2	12.149	11.52
1082.8	2	12.149	11.4
1082.9	2	12.044	11.28
1083	2	11.961	11.16
1083.1	2	11.751	11.075
1083.2	2	11.751	11.025
1083.3	2	11.646	10.975
1083.4	2	11.646	10.925
1083.5	2	11.458	10.875
1083.6	2	11.269	10.825
1083.7	2	11.269	10.775
1083.8	2	11.207	10.725
1083.9	2	11.123	10.675
1084	2	11.06	10.625
1084.1	2	10.976	10.57
1084.2	2	10.913	10.51
1084.3	2	10.829	10.45

1084.4	2	10.767	10.39
1084.5	2	10.683	10.33
1084.6	2	10.599	10.27
1084.7	2	10.536	10.21
1084.8	2	10.473	10.15
1084.9	2	10.39	10.09
1085	2	10.327	10.03
1085.1	2	10.243	9.975
1085.2	2	10.18	9.925
1085.3	2	10.096	9.875
1085.4	2	10.034	9.825
1085.5	2	9.971	9.775
1085.6	2	9.887	9.725
1085.7	2	9.824	9.675
1085.8	2	9.761	9.625
1085.9	2	9.698	9.575
1086	2	9.636	9.525
1086.1	2	9.573	9.48
1086.2	2	9.489	9.44
1086.3	2	9.447	9.4
1086.4	2	9.384	9.36
1086.5	2	9.321	9.32
1086.6	2	9.258	9.28
1086.7	2	9.196	9.24
1086.8	2	9.154	9.2
1086.9	2	9.091	9.16
1087	2	9.049	9.12
1087.1	2	9.007	9.08
1087.2	2	8.965	9.04
1087.3	2	8.923	9
1087.4	2	8.881	8.96
1087.5	2	8.86	8.92
1087.6	2	8.819	8.88
1087.7	2	8.798	8.84
1087.8	2	8.756	8.8
1087.9	2	8.714	8.76
1088	2	8.693	8.72
1088.1	2	8.651	8.695
1088.2	2	8.609	8.685
1088.3	2	8.567	8.675
1088.4	2	8.525	8.665
1088.5	2	8.504	8.655
1088.6	2	8.463	8.645
1088.7	2	8.442	8.635
1088.8	2	8.4	8.625

1088.9	2	8.4	8.615
1089	2	8.358	8.605
1089.1	2	8.358	8.61
1089.2	2	8.358	8.63
1089.3	2	8.358	8.65
1089.4	2	8.379	8.67
1089.5	2	8.421	8.69
1089.6	2	8.483	8.71
1089.7	2	8.546	8.73
1089.8	2	8.546	8.75
1089.9	2	8.651	8.77
1090	2	8.693	8.79
1090.1	2	8.735	8.81
1090.2	2	8.735	8.83
1090.3	2	8.777	8.85
1090.4	2	8.777	8.87
1090.5	2	8.735	8.89
1090.6	2	8.672	8.91
1090.7	2	8.672	8.93
1090.8	2	8.609	8.95
1090.9	2	8.588	8.97
1091	2	8.588	8.99
1091.1	2	8.588	8.985
1091.2	2	8.567	8.955
1091.3	2	8.525	8.925
1091.4	2	8.483	8.895
1091.5	2	8.483	8.865
1091.6	2	8.463	8.835
1091.7	2	8.442	8.805
1091.8	2	8.4	8.775
1091.9	2	8.4	8.745
1092	2	8.379	8.715
1092.1	2	8.358	8.695
1092.2	2	8.337	8.685
1092.3	2	8.337	8.675
1092.4	2	8.337	8.665
1092.5	2	8.337	8.655
1092.6	2	8.358	8.645
1092.7	2	8.379	8.635
1092.8	2	8.379	8.625
1092.9	2	8.379	8.615
1093	2	8.358	8.605
1093.1	2	8.316	8.57
1093.2	2	8.232	8.51
1093.3	2	8.232	8.45



1093.4	2	8.19	8.39
1093.5	2	8.148	8.33
1093.6	2	8.106	8.27
1093.7	2	8.065	8.21
1093.8	2	8.023	8.15
1093.9	2	7.981	8.09
1094	2	7.918	8.03
1094.1	2	7.876	7.95
1094.2	2	7.792	7.85
1094.3	2	7.708	7.75
1094.4	2	7.604	7.65
1094.5	2	7.478	7.55
1094.6	2	7.352	7.45
1094.7	2	7.206	7.35
1094.8	2	7.08	7.25
1094.9	2	6.954	7.15
1095	2	6.871	7.05
1095.1	2	6.808	6.9
1095.2	2	6.745	6.7
1095.3	2	6.703	6.5
1095.4	2	6.64	6.3
1095.5	2	6.598	6.1
1095.6	2	6.535	5.9
1095.7	2	6.431	5.7
1095.8	2	6.326	5.5
1095.9	2	6.221	5.3
1096	2	6.116	5.1
1096.1	2	5.991	4.96
1096.2	2	5.865	4.88
1096.3	2	5.865	4.8
1096.4	2	5.614	4.72
1096.5	2	5.425	4.64
1096.6	2	5.237	4.56
1096.7	2	5.027	4.48
1096.8	2	4.776	4.4
1096.9	2	4.545	4.32
1097	2	4.273	4.24
1097.1	2	4.001	4.12
1097.2	2	3.666	3.96
1097.3	2	3.289	3.8
1097.4	2	2.849	3.64
1097.5	2	2.409	3.48
1097.6	2	1.99	3.32
1097.7	2	1.55	3.16
1097.8	2	1.131	3

1097.9	2	0.796	2.84
1098	2	0.587	2.68
1098.1	2	0.419	2.52
1098.2	2	0.293	2.36
1098.3	2	0.168	2.2
1098.4	2	0.168	2.04
1098.5	2	0.063	1.88
1098.6	2	0.063	1.72
1098.7	2	0.021	1.56
1098.8	2	0	1.4
1098.9	2	0.021	1.24
1099	2	0.042	1.08
1099.1	2	0.042	0.95
1099.2	2	0.042	0.85
1099.3	2	0.042	0.75
1099.4	2	0.021	0.65
1099.5	2	0.021	0.55
1099.6	2	0	0.45
1099.7	2	0	0.35
1099.8	2	0	0.25
1099.9	2	0	0.15
1100	2	0	0.05
1100.1	2	0	0.005
1100.2	2	0	0.015
1100.3	2	0	0.025
1100.4	2	0	0.035
1100.5	2	0	0.045
1100.6	2	0	0.055
1100.7	2	0	0.065
1100.8	2	0	0.075
1100.9	2	0	0.085
1101	2	0	0.095
1101.1	2	0	0.125
1101.2	2	0	0.175
1101.3	2	0	0.225
1101.4	2	0.021	0.275
1101.5	2	0.021	0.325
1101.6	2	0.042	0.375
1101.7	2	0.042	0.425
1101.8	2	0.063	0.475
1101.9	2	0.063	0.525
1102	2	0.084	0.575
1102.1	2	0.084	0.65
1102.2	2	0.126	0.75
1102.3	2	0.209	0.85

1102.4	2	0.209	0.95
1102.5	2	0.293	1.05
1102.6	2	0.419	1.15
1102.7	2	0.607	1.25
1102.8	2	0.775	1.35
1102.9	2	0.943	1.45
1103	2	1.026	1.55
1103.1	2	1.11	1.7
1103.2	2	1.299	1.9
1103.3	2	1.299	2.1
1103.4	2	1.445	2.3
1103.5	2	1.613	2.5
1103.6	2	1.801	2.7
1103.7	2	1.99	2.9
1103.8	2	2.178	3.1
1103.9	2	2.388	3.3
1104	2	2.618	3.5
1104.1	2	2.87	3.765
1104.2	2	3.121	4.095
1104.3	2	3.414	4.425
1104.4	2	3.729	4.755
1104.5	2	4.064	5.085
1104.6	2	4.441	5.415
1104.7	2	4.86	5.745
1104.8	2	5.279	6.075
1104.9	2	5.718	6.405
1105	2	6.179	6.735
1105.1	2	6.661	7.055
1105.2	2	7.122	7.365
1105.3	2	7.583	7.675
1105.4	2	8.044	7.985
1105.5	2	8.463	8.295
1105.6	2	8.84	8.605
1105.7	2	9.175	8.915
1105.8	2	9.468	9.225
1105.9	2	9.761	9.535
1106	2	10.054	9.845
1106.1	2	10.327	10.14
1106.2	2	10.578	10.42
1106.3	2	10.829	10.7
1106.4	2	11.06	10.98
1106.5	2	11.29	11.26
1106.6	2	11.521	11.54
1106.7	2	11.793	11.82
1106.8	2	12.044	12.1

1106.9	2	12.338	12.38
1107	2	12.652	12.66
1107.1	2	12.966	12.86
1107.2	2	13.28	12.98
1107.3	2	13.594	13.1
1107.4	2	13.888	13.22
1107.5	2	14.16	13.34
1107.6	2	14.37	13.46
1107.7	2	14.558	13.58
1107.8	2	14.726	13.7
1107.9	2	14.83	13.82
1108	2	14.83	13.94
1108.1	2	14.935	14.025
1108.2	2	14.977	14.075
1108.3	2	15.019	14.125
1108.4	2	15.082	14.175
1108.5	2	15.186	14.225
1108.6	2	15.312	14.275
1108.7	2	15.459	14.325
1108.8	2	15.605	14.375
1108.9	2	15.605	14.425
1109	2	15.961	14.475
1109.1	2	16.171	14.575
1109.2	2	16.38	14.725
1109.3	2	16.38	14.875
1109.4	2	16.38	15.025
1109.5	2	17.009	15.175
1109.6	2	17.176	15.325
1109.7	2	17.344	15.475
1109.8	2	17.344	15.625
1109.9	2	17.512	15.775
1110	2	17.763	15.925
1110.1	2	17.889	16.105
1110.2	2	17.889	16.315
1110.3	2	17.993	16.525
1110.4	2	18.161	16.735
1110.5	2	18.245	16.945
1110.6	2	18.245	17.155
1110.7	2	18.308	17.365
1110.8	2	18.391	17.575
1110.9	2	18.58	17.785
1111	2	18.705	17.995
1111.1	2	18.705	18.195
1111.2	2	18.852	18.385
1111.3	2	18.978	18.575

1111.4	2	19.229	18.765
1111.5	2	19.229	18.955
1111.6	2	19.376	19.145
1111.7	2	19.522	19.335
1111.8	2	19.69	19.525
1111.9	2	20.025	19.715
1112	2	20.025	19.905
1112.1	2	20.172	20.05
1112.2	2	20.318	20.15
1112.3	2	20.423	20.25
1112.4	2	20.549	20.35
1112.5	2	20.674	20.45
1112.6	2	20.779	20.55
1112.7	2	20.884	20.65
1112.8	2	20.989	20.75
1112.9	2	21.072	20.85
1113	2	21.156	20.95
1113.1	2	21.219	21.01
1113.2	2	21.261	21.03
1113.3	2	21.282	21.05
1113.4	2	21.303	21.07
1113.5	2	21.303	21.09
1113.6	2	21.303	21.11
1113.7	2	21.324	21.13
1113.8	2	21.324	21.15
1113.9	2	21.324	21.17
1114	2	21.345	21.19
1114.1	2	21.387	21.205
1114.2	2	21.429	21.215
1114.3	2	21.47	21.225
1114.4	2	21.533	21.235
1114.5	2	21.575	21.245
1114.6	2	21.638	21.255
1114.7	2	21.68	21.265
1114.8	2	21.743	21.275
1114.9	2	21.827	21.285
1115	2	21.889	21.295
1115.1	2	21.973	21.305
1115.2	2	22.036	21.315
1115.3	2	22.099	21.325
1115.4	2	22.162	21.335
1115.5	2	22.225	21.345
1115.6	2	22.266	21.355
1115.7	2	22.329	21.365
1115.8	2	22.35	21.375

1115.9	2	22.35	21.385
1116	2	22.329	21.395
1116.1	2	22.287	21.415
1116.2	2	22.225	21.445
1116.3	2	22.162	21.475
1116.4	2	22.078	21.505
1116.5	2	22.015	21.535
1116.6	2	21.931	21.565
1116.7	2	21.889	21.595
1116.8	2	21.848	21.625
1116.9	2	21.827	21.655
1117	2	21.827	21.685
1117.1	2	21.868	21.74
1117.2	2	21.931	21.82
1117.3	2	21.994	21.9
1117.4	2	22.078	21.98
1117.5	2	22.162	22.06
1117.6	2	22.162	22.14
1117.7	2	22.308	22.22
1117.8	2	22.392	22.3
1117.9	2	22.476	22.38
1118	2	22.476	22.46
1118.1	2	22.685	22.525
1118.2	2	22.79	22.575
1118.3	2	22.895	22.625
1118.4	2	23.021	22.675
1118.5	2	23.021	22.725
1118.6	2	23.209	22.775
1118.7	2	23.314	22.825
1118.8	2	23.398	22.875
1118.9	2	23.398	22.925
1119	2	23.46	22.975
1119.1	2	23.628	23.04
1119.2	2	23.691	23.12
1119.3	2	23.691	23.2
1119.4	2	23.754	23.28
1119.5	2	23.817	23.36
1119.6	2	23.921	23.44
1119.7	2	23.984	23.52
1119.8	2	23.984	23.6
1119.9	2	24.026	23.68
1120	2	24.089	23.76
1120.1	2	24.131	23.835
1120.2	2	24.131	23.905
1120.3	2	24.152	23.975

1120.4	2	24.152	24.045
1120.5	2	24.11	24.115
1120.6	2	24.11	24.185
1120.7	2	24.068	24.255
1120.8	2	24.026	24.325
1120.9	2	24.005	24.395
1121	2	23.963	24.465
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1121.2	2	23.942	24.575
1121.3	2	23.921	24.625
1121.4	2	23.879	24.675
1121.5	2	23.879	24.725
1121.6	2	23.879	24.775
1121.7	2	23.942	24.825
1121.8	2	24.047	24.875
1121.9	2	24.194	24.925
1122	2	24.361	24.975
1122.1	2	24.529	24.995
1122.2	2	24.717	24.985
1122.3	2	24.717	24.975
1122.4	2	25.031	24.965
1122.5	2	25.157	24.955
1122.6	2	25.22	24.945
1122.7	2	25.283	24.935
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1122.9	2	25.262	24.915
1123	2	25.262	24.905
1123.1	2	25.241	24.895
1123.2	2	25.241	24.885
1123.3	2	25.262	24.875
1123.4	2	25.283	24.865
1123.5	2	25.304	24.855
1123.6	2	25.346	24.845
1123.7	2	25.367	24.835
1123.8	2	25.388	24.825
1123.9	2	25.429	24.815
1124	2	25.471	24.805
1124.1	2	25.534	24.81
1124.2	2	25.576	24.83
1124.3	2	25.639	24.85
1124.4	2	25.681	24.87
1124.5	2	25.723	24.89
1124.6	2	25.744	24.91
1124.7	2	25.744	24.93
1124.8	2	25.744	24.95

1124.9	2	25.723	24.97
1125	2	25.66	24.99
1125.1	2	25.597	25.02
1125.2	2	25.513	25.06
1125.3	2	25.45	25.1
1125.4	2	25.388	25.14
1125.5	2	25.346	25.18
1125.6	2	25.304	25.22
1125.7	2	25.304	25.26
1125.8	2	25.304	25.3
1125.9	2	25.304	25.34
1126	2	25.304	25.38
1126.1	2	25.304	25.42
1126.2	2	25.304	25.46
1126.3	2	25.325	25.5
1126.4	2	25.325	25.54
1126.5	2	25.325	25.58
1126.6	2	25.325	25.62
1126.7	2	25.325	25.66
1126.8	2	25.325	25.7
1126.9	2	25.367	25.74
1127	2	25.429	25.78
1127.1	2	25.429	25.81
1127.2	2	25.555	25.83
1127.3	2	25.618	25.85
1127.4	2	25.681	25.87
1127.5	2	25.765	25.89
1127.6	2	25.765	25.91
1127.7	2	25.869	25.93
1127.8	2	25.89	25.95
1127.9	2	25.932	25.97
1128	2	25.932	25.99
1128.1	2	25.953	26.02
1128.2	2	25.995	26.06
1128.3	2	26.037	26.1
1128.4	2	26.037	26.14
1128.5	2	26.058	26.18
1128.6	2	26.079	26.22
1128.7	2	26.079	26.26
1128.8	2	26.079	26.3
1128.9	2	26.079	26.34
1129	2	26.079	26.38
1129.1	2	26.079	26.41
1129.2	2	26.079	26.43
1129.3	2	26.079	26.45



1129.4	2	26.079	26.47
1129.5	2	26.079	26.49
1129.6	2	26.079	26.51
1129.7	2	26.079	26.53
1129.8	2	26.1	26.55
1129.9	2	26.1	26.57
1130	2	26.1	26.59
1130.1	2	26.1	26.615
1130.2	2	26.1	26.645
1130.3	2	26.142	26.675
1130.4	2	26.184	26.705
1130.5	2	26.288	26.735
1130.6	2	26.288	26.765
1130.7	2	26.372	26.795
1130.8	2	26.414	26.825
1130.9	2	26.54	26.855
1131	2	26.54	26.885
1131.1	2	26.602	26.905
1131.2	2	26.665	26.915
1131.3	2	26.749	26.925
1131.4	2	26.812	26.935
1131.5	2	26.875	26.945
1131.6	2	26.938	26.955
1131.7	2	26.979	26.965
1131.8	2	27.021	26.975
1131.9	2	27.063	26.985
1132	2	27.084	26.995
1132.1	2	27.105	27
1132.2	2	27.105	27
1132.3	2	27.105	27
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1132.6	2	27.063	27
1132.7	2	27.063	27
1132.8	2	27.042	27
1132.9	2	27.021	27
1133	2	27.021	27
1133.1	2	27	27
1133.2	2	26.979	27
1133.3	2	26.959	27
1133.4	2	26.938	27
1133.5	2	26.917	27
1133.6	2	26.917	27
1133.7	2	26.896	27
1133.8	2	26.875	27

1133.9	2	26.875	27
1134	2	26.875	27
1134.1	2	26.854	26.995
1134.2	2	26.854	26.985
1134.3	2	26.854	26.975
1134.4	2	26.833	26.965
1134.5	2	26.833	26.955
1134.6	2	26.812	26.945
1134.7	2	26.812	26.935
1134.8	2	26.812	26.925
1134.9	2	26.812	26.915
1135	2	26.812	26.905
1135.1	2	26.812	26.895
1135.2	2	26.812	26.885
1135.3	2	26.812	26.875
1135.4	2	26.812	26.865
1135.5	2	26.812	26.855
1135.6	2	26.833	26.845
1135.7	2	26.833	26.835
1135.8	2	26.833	26.825
1135.9	2	26.833	26.815
1136	2	26.833	26.805
1136.1	2	26.833	26.8
1136.2	2	26.833	26.8
1136.3	2	26.833	26.8
1136.4	2	26.833	26.8
1136.5	2	26.833	26.8
1136.6	2	26.854	26.8
1136.7	2	26.854	26.8
1136.8	2	26.854	26.8
1136.9	2	26.854	26.8
1137	2	26.854	26.8
1137.1	2	26.854	26.785
1137.2	2	26.833	26.755
1137.3	2	26.812	26.725
1137.4	2	26.812	26.695
1137.5	2	26.791	26.665
1137.6	2	26.791	26.635
1137.7	2	26.749	26.605
1137.8	2	26.707	26.575
1137.9	2	26.686	26.545
1138	2	26.686	26.515
1138.1	2	26.644	26.495
1138.2	2	26.561	26.485
1138.3	2	26.519	26.475

1138.4	2	26.477	26.465
1138.5	2	26.477	26.455
1138.6	2	26.435	26.445
1138.7	2	26.33	26.435
1138.8	2	26.288	26.425
1138.9	2	26.288	26.415
1139	2	26.246	26.405
1139.1	2	26.204	26.38
1139.2	2	26.142	26.34
1139.3	2	26.142	26.3
1139.4	2	26.1	26.26
1139.5	2	26.079	26.22
1139.6	2	26.037	26.18
1139.7	2	25.974	26.14
1139.8	2	25.974	26.1
1139.9	2	25.932	26.06
1140	2	25.911	26.02
1140.1	2	25.827	25.975
1140.2	2	25.827	25.925
1140.3	2	25.786	25.875
1140.4	2	25.765	25.825
1140.5	2	25.723	25.775
1140.6	2	25.681	25.725
1140.7	2	25.639	25.675
1140.8	2	25.597	25.625
1140.9	2	25.555	25.575
1141	2	25.513	25.525
1141.1	2	25.45	25.455
1141.2	2	25.408	25.365
1141.3	2	25.346	25.275
1141.4	2	25.283	25.185
1141.5	2	25.199	25.095
1141.6	2	25.115	25.005
1141.7	2	25.052	24.915
1141.8	2	24.969	24.825
1141.9	2	24.906	24.735
1142	2	24.822	24.645
1142.1	2	24.759	24.545
1142.2	2	24.675	24.435
1142.3	2	24.571	24.325
1142.4	2	24.487	24.215
1142.5	2	24.403	24.105
1142.6	2	24.319	23.995
1142.7	2	24.235	23.885
1142.8	2	24.152	23.775

1142.9	2	24.068	23.665
1143	2	23.984	23.555
1143.1	2	23.9	23.4
1143.2	2	23.817	23.2
1143.3	2	23.712	23
1143.4	2	23.628	22.8
1143.5	2	23.544	22.6
1143.6	2	23.419	22.4
1143.7	2	23.293	22.2
1143.8	2	23.146	22
1143.9	2	22.958	21.8
1144	2	22.748	21.6
1144.1	2	22.539	21.425
1144.2	2	22.287	21.275
1144.3	2	22.015	21.125
1144.4	2	21.701	20.975
1144.5	2	21.345	20.825
1144.6	2	20.947	20.675
1144.7	2	20.528	20.525
1144.8	2	20.13	20.375
1144.9	2	19.753	20.225
1145	2	19.46	20.075
1145.1	2	19.229	19.875
1145.2	2	19.041	19.625
1145.3	2	18.894	19.375
1145.4	2	18.789	19.125
1145.5	2	18.685	18.875
1145.6	2	18.601	18.625
1145.7	2	18.517	18.375
1145.8	2	18.517	18.125
1145.9	2	18.328	17.875
1146	2	18.245	17.625
1146.1	2	18.14	17.425
1146.2	2	18.035	17.275
1146.3	2	18.035	17.125
1146.4	2	17.847	16.975
1146.5	2	17.742	16.825
1146.6	2	17.637	16.675
1146.7	2	17.637	16.525
1146.8	2	17.407	16.375
1146.9	2	17.239	16.225
1147	2	17.072	16.075
1147.1	2	17.072	15.9
1147.2	2	16.883	15.7
1147.3	2	16.506	15.5

1147.4	2	16.276	15.3
1147.5	2	16.045	15.1
1147.6	2	16.045	14.9
1147.7	2	15.794	14.7
1147.8	2	14.998	14.5
1147.9	2	14.432	14.3
1148	2	14.432	14.1
1148.1	2	13.72	13.835
1148.2	2	12.987	13.505
1148.3	2	11.73	13.175
1148.4	2	11.207	12.845
1148.5	2	11.207	12.515
1148.6	2	10.725	12.185
1148.7	2	10.285	11.855
1148.8	2	9.447	11.525
1148.9	2	9.447	11.195
1149	2	9.112	10.865
1149.1	2	8.86	10.535
1149.2	2	8.63	10.205
1149.3	2	8.379	9.875
1149.4	2	8.148	9.545
1149.5	2	7.939	9.215
1149.6	2	7.729	8.885
1149.7	2	7.331	8.555
1149.8	2	7.331	8.225
1149.9	2	7.122	7.895
1150	2	6.912	7.565
1150.1	2	6.661	7.235
1150.2	2	6.368	6.905
1150.3	2	6.054	6.575
1150.4	2	5.76	6.245
1150.5	2	5.425	5.915
1150.6	2	5.111	5.585
1150.7	2	4.797	5.255
1150.8	2	4.483	4.925
1150.9	2	4.168	4.595
1151	2	3.854	4.265
1151.1	2	3.519	3.935
1151.2	2	3.184	3.605
1151.3	2	2.849	3.275
1151.4	2	2.535	2.945
1151.5	2	2.178	2.615
1151.6	2	1.822	2.285
1151.7	2	1.466	1.955
1151.8	2	1.11	1.625

1151.9	2	0.733	1.295
1152	2	0.377	0.965
1152.1	2	0.209	0.76
1152.2	2	0.189	0.68
1152.3	2	0.168	0.6
1152.4	2	0.084	0.52
1152.5	2	0.084	0.44
1152.6	2	0.105	0.36
1152.7	2	0.063	0.28
1152.8	2	0.042	0.2
1152.9	2	0.063	0.12
1153	2	0.063	0.04
1153.1	2	0.042	0
1153.2	2	0.042	0
1153.3	2	0.042	0
1153.4	2	0.021	0
1153.5	2	0.021	0
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1153.7	2	0	0
1153.8	2	0	0
1153.9	2	0.021	0
1154	2	0	0
1154.1	2	0	0
1154.2	2	0	0
1154.3	2	0	0
1154.4	2	0	0
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1156.1	2	0	0
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1158.9	2	0	0
1159	2	0	0
1159.1	2	-0.021	0
1159.2	2	0	0
1159.3	2	0	0
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1159.8	2	-0.021	0
1159.9	2	0	0
1160	2	0	0
1160.1	2	-0.021	0
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1160.3	2	-0.021	0
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1160.8	2	-0.021	0

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1161	2	-0.021	0
1161.1	2	-0.021	0
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1162	2	-0.021	0
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1162.3	2	-0.021	0
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1162.7	2	0	0
1162.8	2	-0.021	0
1162.9	2	0	0
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1163.8	2	-0.021	0
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1164.8	2	0	0
1164.9	2	-0.021	0
1165	2	-0.021	0
1165.1	2	0	0
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1165.3	2	-0.021	0



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1166.8	2	-0.021	0
1166.9	2	-0.021	0
1167	2	-0.021	0
1167.1	2	0	0
1167.2	2	-0.021	0
1167.3	2	-0.021	0
1167.4	2	-0.021	0
1167.5	2	0	0
1167.6	2	0.021	0
1167.7	2	0.042	0
1167.8	2	0.063	0
1167.9	2	0.063	0
1168	2	0.063	0
1168.1	2	0.126	0.105
1168.2	2	0.398	0.315
1168.3	2	0.398	0.525
1168.4	2	0.587	0.735
1168.5	2	0.796	0.945
1168.6	2	0.984	1.155
1168.7	2	1.173	1.365
1168.8	2	1.382	1.575
1168.9	2	1.571	1.785
1169	2	1.78	1.995
1169.1	2	2.262	2.265
1169.2	2	2.262	2.595
1169.3	2	2.514	2.925
1169.4	2	2.786	3.255
1169.5	2	3.079	3.585
1169.6	2	3.351	3.915
1169.7	2	3.666	4.245
1169.8	2	4.001	4.575

1169.9	2	4.357	4.905
1170	2	4.755	5.235
1170.1	2	5.174	5.565
1170.2	2	5.614	5.895
1170.3	2	6.054	6.225
1170.4	2	6.494	6.555
1170.5	2	6.954	6.885
1170.6	2	7.394	7.215
1170.7	2	7.834	7.545
1170.8	2	8.274	7.875
1170.9	2	8.693	8.205
1171	2	9.07	8.535
1171.1	2	9.447	8.865
1171.2	2	9.803	9.195
1171.3	2	10.138	9.525
1171.4	2	10.494	9.855
1171.5	2	10.829	10.185
1171.6	2	11.186	10.515
1171.7	2	11.542	10.845
1171.8	2	11.898	11.175
1171.9	2	12.254	11.505
1172	2	12.61	11.835
1172.1	2	12.966	12.165
1172.2	2	13.322	12.495
1172.3	2	13.657	12.825
1172.4	2	14.013	13.155
1172.5	2	14.37	13.485
1172.6	2	14.726	13.815
1172.7	2	15.103	14.145
1172.8	2	15.459	14.475
1172.9	2	15.836	14.805
1173	2	16.234	15.135
1173.1	2	16.611	15.465
1173.2	2	17.009	15.795
1173.3	2	17.386	16.125
1173.4	2	17.763	16.455
1173.5	2	18.119	16.785
1173.6	2	18.454	17.115
1173.7	2	18.747	17.445
1173.8	2	18.978	17.775
1173.9	2	19.208	18.105
1174	2	19.418	18.435
1174.1	2	19.627	18.725
1174.2	2	19.627	18.975
1174.3	2	20.088	19.225

1174.4	2	20.088	19.475
1174.5	2	20.591	19.725
1174.6	2	20.863	19.975
1174.7	2	21.093	20.225
1174.8	2	21.093	20.475
1174.9	2	21.575	20.725
1175	2	21.806	20.975
1175.1	2	22.057	21.195
1175.2	2	22.308	21.385
1175.3	2	22.308	21.575
1175.4	2	22.748	21.765
1175.5	2	22.937	21.955
1175.6	2	23.125	22.145
1175.7	2	23.125	22.335
1175.8	2	23.272	22.525
1175.9	2	23.544	22.715
1176	2	23.649	22.905
1176.1	2	23.649	23.025
1176.2	2	23.733	23.075
1176.3	2	23.775	23.125
1176.4	2	23.775	23.175
1176.5	2	23.754	23.225
1176.6	2	23.754	23.275
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1176.8	2	23.691	23.375
1176.9	2	23.628	23.425
1177	2	23.628	23.475
1177.1	2	23.544	23.475
1177.2	2	23.46	23.425
1177.3	2	23.356	23.375
1177.4	2	23.167	23.325
1177.5	2	23.167	23.275
1177.6	2	23.083	23.225
1177.7	2	23	23.175
1177.8	2	22.832	23.125
1177.9	2	22.832	23.075
1178	2	22.748	23.025
1178.1	2	22.664	22.975
1178.2	2	22.581	22.925
1178.3	2	22.413	22.875
1178.4	2	22.413	22.825
1178.5	2	22.329	22.775
1178.6	2	22.225	22.725
1178.7	2	22.162	22.675
1178.8	2	22.057	22.625

1178.9	2	21.973	22.575
1179	2	21.889	22.525
1179.1	2	21.806	22.375
1179.2	2	21.701	22.125
1179.3	2	21.554	21.875
1179.4	2	21.408	21.625
1179.5	2	21.219	21.375
1179.6	2	20.968	21.125
1179.7	2	20.674	20.875
1179.8	2	20.381	20.625
1179.9	2	20.067	20.375
1180	2	19.711	20.125
1180.1	2	19.355	19.835
1180.2	2	18.915	19.505
1180.3	2	18.412	19.175
1180.4	2	17.868	18.845
1180.5	2	17.323	18.515
1180.6	2	16.799	18.185
1180.7	2	16.318	17.855
1180.8	2	15.857	17.525
1180.9	2	15.396	17.195
1181	2	14.956	16.865
1181.1	2	14.579	16.535
1181.2	2	14.265	16.205
1181.3	2	13.992	15.875
1181.4	2	13.741	15.545
1181.5	2	13.553	15.215
1181.6	2	13.364	14.885
1181.7	2	13.196	14.555
1181.8	2	13.029	14.225
1181.9	2	12.84	13.895
1182	2	12.673	13.565
1182.1	2	12.484	13.235
1182.2	2	12.296	12.905
1182.3	2	12.107	12.575
1182.4	2	11.919	12.245
1182.5	2	11.73	11.915
1182.6	2	11.521	11.585
1182.7	2	11.269	11.255
1182.8	2	10.934	10.925
1182.9	2	10.599	10.595
1183	2	10.243	10.265
1183.1	2	9.887	9.935
1183.2	2	9.531	9.605
1183.3	2	9.175	9.275

1183.4	2	8.819	8.945
1183.5	2	8.819	8.615
1183.6	2	8.106	8.285
1183.7	2	7.729	7.955
1183.8	2	7.352	7.625
1183.9	2	6.975	7.295
1184	2	6.975	6.965
1184.1	2	6.096	6.635
1184.2	2	5.593	6.305
1184.3	2	5.069	5.975
1184.4	2	5.069	5.645
1184.5	2	3.98	5.315
1184.6	2	3.477	4.985
1184.7	2	3.037	4.655
1184.8	2	3.037	4.325
1184.9	2	2.618	3.995
1185	2	1.801	3.665
1185.1	2	1.403	3.335
1185.2	2	1.005	3.005
1185.3	2	1.005	2.675
1185.4	2	0.607	2.345
1185.5	2	0.209	2.015
1185.6	2	0.189	1.685
1185.7	2	0.189	1.355
1185.8	2	0.147	1.025
1185.9	2	0.105	0.695
1186	2	0.105	0.365
1186.1	2	0.105	0.19
1186.2	2	0.063	0.17
1186.3	2	0.063	0.15
1186.4	2	0.063	0.13
1186.5	2	0.021	0.11
1186.6	2	0.021	0.09
1186.7	2	0.042	0.07
1186.8	2	0.021	0.05
1186.9	2	0.021	0.03
1187	2	0.021	0.01
1187.1	2	0.021	0
1187.2	2	0	0
1187.3	2	0.021	0
1187.4	2	0.021	0
1187.5	2	0	0
1187.6	2	0	0
1187.7	2	0	0
1187.8	2	0	0

1187.9	2	0	0
1188	2	0	0
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1188.2	2	0	0
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1188.5	2	0	0
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1188.9	2	0	0
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1189.6	2	0	0
1189.7	2	0	0
1189.8	2	0	0
1189.9	2	0	0
1190	2	-0.021	0
1190.1	2	0	0
1190.2	2	0	0
1190.3	2	0	0
1190.4	2	0	0
1190.5	2	0	0
1190.6	2	-0.021	0
1190.7	2	0	0
1190.8	2	0	0
1190.9	2	0	0
1191	2	-0.021	0
1191.1	2	-0.021	0
1191.2	2	0	0
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1191.4	2	0	0
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1191.6	2	0	0
1191.7	2	-0.021	0
1191.8	2	0	0
1191.9	2	0	0
1192	2	-0.021	0
1192.1	2	-0.021	0
1192.2	2	0	0
1192.3	2	-0.021	0

1192.4	2	-0.021	0
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1192.8	2	0	0
1192.9	2	-0.021	0
1193	2	-0.021	0
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1193.3	2	-0.021	0
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1193.9	2	-0.021	0
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1194.1	2	-0.021	0
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1194.3	2	-0.021	0
1194.4	2	-0.021	0
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1194.8	2	0	0
1194.9	2	0	0
1195	2	0	0
1195.1	2	0	0
1195.2	2	-0.021	0
1195.3	2	-0.021	0
1195.4	2	-0.021	0
1195.5	2	-0.021	0
1195.6	2	-0.021	0
1195.7	2	-0.021	0
1195.8	2	-0.021	0
1195.9	2	0	0
1196	2	-0.021	0
1196.1	2	-0.021	0.01
1196.2	2	-0.021	0.03
1196.3	2	-0.021	0.05
1196.4	2	0	0.07
1196.5	2	-0.021	0.09
1196.6	2	-0.021	0.11
1196.7	2	-0.021	0.13
1196.8	2	0	0.15

1196.9	2	0.021	0.17
1197	2	0.021	0.19
1197.1	2	0.042	0.265
1197.2	2	0.042	0.395
1197.3	2	0.063	0.525
1197.4	2	0.084	0.655
1197.5	2	0.084	0.785
1197.6	2	0.126	0.915
1197.7	2	0.189	1.045
1197.8	2	0.272	1.175
1197.9	2	0.398	1.305
1198	2	0.545	1.435
1198.1	2	0.733	1.6
1198.2	2	0.901	1.8
1198.3	2	1.089	2
1198.4	2	1.299	2.2
1198.5	2	1.487	2.4
1198.6	2	1.697	2.6
1198.7	2	1.885	2.8
1198.8	2	2.095	3
1198.9	2	2.325	3.2
1199	2	2.535	3.4
1199.1	2	2.744	3.65
1199.2	2	2.974	3.95
1199.3	2	3.205	4.25
1199.4	2	3.456	4.55
1199.5	2	3.749	4.85
1199.6	2	4.043	5.15
1199.7	2	4.378	5.45
1199.8	2	4.692	5.75
1199.9	2	5.048	6.05
1200	2	5.383	6.35
1200.1	2	5.739	6.665
1200.2	2	5.739	6.995
1200.3	2	6.41	7.325
1200.4	2	6.724	7.655
1200.5	2	7.017	7.985
1200.6	2	7.289	8.315
1200.7	2	7.562	8.645
1200.8	2	7.813	8.975
1200.9	2	8.065	9.305
1201	2	8.274	9.635
1201.1	2	8.504	9.91
1201.2	2	8.714	10.13
1201.3	2	8.923	10.35



1201.4	2	9.133	10.57
1201.5	2	9.321	10.79
1201.6	2	9.531	11.01
1201.7	2	9.74	11.23
1201.8	2	9.95	11.45
1201.9	2	10.18	11.67
1202	2	10.411	11.89
1202.1	2	10.62	12.045
1202.2	2	10.85	12.135
1202.3	2	11.081	12.225
1202.4	2	11.311	12.315
1202.5	2	11.563	12.405
1202.6	2	11.563	12.495
1202.7	2	12.044	12.585
1202.8	2	12.296	12.675
1202.9	2	12.547	12.765
1203	2	12.547	12.855
1203.1	2	12.945	12.905
1203.2	2	13.113	12.915
1203.3	2	13.196	12.925
1203.4	2	13.238	12.935
1203.5	2	13.238	12.945
1203.6	2	13.196	12.955
1203.7	2	13.092	12.965
1203.8	2	12.987	12.975
1203.9	2	12.987	12.985
1204	2	12.882	12.995
1204.1	2	12.631	12.98
1204.2	2	12.484	12.94
1204.3	2	12.38	12.9
1204.4	2	12.38	12.86
1204.5	2	12.317	12.82
1204.6	2	12.254	12.78
1204.7	2	12.233	12.74
1204.8	2	12.233	12.7
1204.9	2	12.233	12.66
1205	2	12.233	12.62
1205.1	2	12.233	12.61
1205.2	2	12.233	12.63
1205.3	2	12.233	12.65
1205.4	2	12.254	12.67
1205.5	2	12.296	12.69
1205.6	2	12.338	12.71
1205.7	2	12.338	12.73
1205.8	2	12.401	12.75

1205.9	2	12.463	12.77
1206	2	12.61	12.79
1206.1	2	12.61	12.815
1206.2	2	12.673	12.845
1206.3	2	12.736	12.875
1206.4	2	12.819	12.905
1206.5	2	12.882	12.935
1206.6	2	12.966	12.965
1206.7	2	13.05	12.995
1206.8	2	13.113	13.025
1206.9	2	13.217	13.055
1207	2	13.217	13.085
1207.1	2	13.259	13.1
1207.2	2	13.28	13.1
1207.3	2	13.322	13.1
1207.4	2	13.343	13.1
1207.5	2	13.343	13.1
1207.6	2	13.364	13.1
1207.7	2	13.364	13.1
1207.8	2	13.385	13.1
1207.9	2	13.406	13.1
1208	2	13.448	13.1
1208.1	2	13.511	13.145
1208.2	2	13.615	13.235
1208.3	2	13.741	13.325
1208.4	2	13.867	13.42
1208.5	2	14.013	13.505
1208.6	2	14.181	13.595
1208.7	2	14.349	13.685
1208.8	2	14.516	13.775
1208.9	2	14.705	13.865
1209	2	14.893	13.955
1209.1	2	15.082	14.075
1209.2	2	15.291	14.225
1209.3	2	15.501	14.375
1209.4	2	15.689	14.525
1209.5	2	15.878	14.675
1209.6	2	16.045	14.825
1209.7	2	16.213	14.975
1209.8	2	16.401	15.125
1209.9	2	16.548	15.275
1210	2	16.716	15.425
1210.1	2	16.862	15.575
1210.2	2	16.988	15.725
1210.3	2	17.093	15.875

1210.4	2	17.176	16.025
1210.5	2	17.281	16.175
1210.6	2	17.365	16.325
1210.7	2	17.449	16.475
1210.8	2	17.532	16.625
1210.9	2	17.595	16.775
1211	2	17.658	16.925
1211.1	2	17.742	17.08
1211.2	2	17.805	17.24
1211.3	2	17.91	17.4
1211.4	2	18.014	17.56
1211.5	2	18.14	17.72
1211.6	2	18.266	17.88
1211.7	2	18.391	18.04
1211.8	2	18.391	18.2
1211.9	2	18.664	18.36
1212	2	18.81	18.52
1212.1	2	18.957	18.655
1212.2	2	19.083	18.765
1212.3	2	19.229	18.875
1212.4	2	19.376	18.985
1212.5	2	19.501	19.095
1212.6	2	19.648	19.205
1212.7	2	19.648	19.315
1212.8	2	19.899	19.425
1212.9	2	20.025	19.535
1213	2	20.151	19.645
1213.1	2	20.151	19.765
1213.2	2	20.256	19.895
1213.3	2	20.486	20.025
1213.4	2	20.591	20.155
1213.5	2	20.695	20.285
1213.6	2	20.695	20.415
1213.7	2	20.8	20.545
1213.8	2	20.989	20.675
1213.9	2	21.072	20.805
1214	2	21.072	20.935
1214.1	2	21.156	21.025
1214.2	2	21.24	21.075
1214.3	2	21.408	21.125
1214.4	2	21.512	21.175
1214.5	2	21.512	21.225
1214.6	2	21.596	21.275
1214.7	2	21.68	21.325
1214.8	2	21.743	21.375

1214.9	2	21.743	21.425
1215	2	21.743	21.475
1215.1	2	21.68	21.515
1215.2	2	21.596	21.545
1215.3	2	21.596	21.575
1215.4	2	21.554	21.605
1215.5	2	21.512	21.635
1215.6	2	21.47	21.665
1215.7	2	21.429	21.695
1215.8	2	21.429	21.725
1215.9	2	21.387	21.755
1216	2	21.387	21.785
1216.1	2	21.366	21.8
1216.2	2	21.366	21.8
1216.3	2	21.366	21.8
1216.4	2	21.387	21.8
1216.5	2	21.429	21.8
1216.6	2	21.491	21.8
1216.7	2	21.554	21.8
1216.8	2	21.617	21.8
1216.9	2	21.638	21.8
1217	2	21.638	21.8
1217.1	2	21.596	21.785
1217.2	2	21.533	21.755
1217.3	2	21.491	21.725
1217.4	2	21.45	21.695
1217.5	2	21.387	21.665
1217.6	2	21.324	21.635
1217.7	2	21.261	21.605
1217.8	2	21.198	21.575
1217.9	2	21.135	21.545
1218	2	21.093	21.515
1218.1	2	21.072	21.485
1218.2	2	21.093	21.455
1218.3	2	21.114	21.425
1218.4	2	21.177	21.395
1218.5	2	21.219	21.365
1218.6	2	21.282	21.335
1218.7	2	21.366	21.305
1218.8	2	21.408	21.275
1218.9	2	21.491	21.245
1219	2	21.554	21.215
1219.1	2	21.617	21.215
1219.2	2	21.701	21.245
1219.3	2	21.764	21.275

1219.4	2	21.806	21.305
1219.5	2	21.827	21.335
1219.6	2	21.827	21.365
1219.7	2	21.827	21.395
1219.8	2	21.827	21.425
1219.9	2	21.806	21.455
1220	2	21.785	21.485
1220.1	2	21.743	21.515
1220.2	2	21.701	21.545
1220.3	2	21.68	21.575
1220.4	2	21.638	21.605
1220.5	2	21.638	21.635
1220.6	2	21.638	21.665
1220.7	2	21.659	21.695
1220.8	2	21.722	21.725
1220.9	2	21.764	21.755
1221	2	21.764	21.785
1221.1	2	21.889	21.81
1221.2	2	21.931	21.83
1221.3	2	21.973	21.85
1221.4	2	22.036	21.87
1221.5	2	22.078	21.89
1221.6	2	22.12	21.91
1221.7	2	22.162	21.93
1221.8	2	22.204	21.95
1221.9	2	22.204	21.97
1222	2	22.225	21.99
1222.1	2	22.204	21.995
1222.2	2	22.141	21.985
1222.3	2	22.141	21.975
1222.4	2	22.078	21.965
1222.5	2	21.952	21.955
1222.6	2	21.91	21.945
1222.7	2	21.848	21.935
1222.8	2	21.848	21.925
1222.9	2	21.806	21.915
1223	2	21.764	21.905
1223.1	2	21.722	21.89
1223.2	2	21.722	21.87
1223.3	2	21.659	21.85
1223.4	2	21.575	21.83
1223.5	2	21.554	21.81
1223.6	2	21.533	21.79
1223.7	2	21.533	21.77
1223.8	2	21.533	21.75

1223.9	2	21.575	21.73
1224	2	21.575	21.71
1224.1	2	21.575	21.69
1224.2	2	21.554	21.67
1224.3	2	21.491	21.65
1224.4	2	21.408	21.63
1224.5	2	21.408	21.61
1224.6	2	21.387	21.59
1224.7	2	21.324	21.57
1224.8	2	21.261	21.55
1224.9	2	21.156	21.53
1225	2	21.156	21.51
1225.1	2	21.135	21.5
1225.2	2	21.135	21.5
1225.3	2	21.135	21.5
1225.4	2	21.156	21.5
1225.5	2	21.177	21.5
1225.6	2	21.198	21.5
1225.7	2	21.219	21.5
1225.8	2	21.261	21.5
1225.9	2	21.261	21.5
1226	2	21.282	21.5
1226.1	2	21.303	21.495
1226.2	2	21.303	21.485
1226.3	2	21.366	21.475
1226.4	2	21.387	21.465
1226.5	2	21.408	21.455
1226.6	2	21.387	21.445
1226.7	2	21.345	21.435
1226.8	2	21.303	21.425
1226.9	2	21.24	21.415
1227	2	21.177	21.405
1227.1	2	21.093	21.335
1227.2	2	21.01	21.205
1227.3	2	20.947	21.075
1227.4	2	20.863	20.945
1227.5	2	20.779	20.815
1227.6	2	20.695	20.685
1227.7	2	20.633	20.555
1227.8	2	20.549	20.425
1227.9	2	20.465	20.295
1228	2	20.402	20.165
1228.1	2	20.318	20.07
1228.2	2	20.256	20.01
1228.3	2	20.172	19.95

1228.4	2	20.088	19.89
1228.5	2	20.025	19.83
1228.6	2	19.941	19.77
1228.7	2	19.879	19.71
1228.8	2	19.795	19.65
1228.9	2	19.753	19.59
1229	2	19.732	19.53
1229.1	2	19.711	19.485
1229.2	2	19.711	19.455
1229.3	2	19.732	19.425
1229.4	2	19.753	19.395
1229.5	2	19.774	19.365
1229.6	2	19.774	19.335
1229.7	2	19.795	19.305
1229.8	2	19.795	19.275
1229.9	2	19.795	19.245
1230	2	19.774	19.215
1230.1	2	19.753	19.22
1230.2	2	19.711	19.26
1230.3	2	19.648	19.3
1230.4	2	19.606	19.34
1230.5	2	19.543	19.38
1230.6	2	19.543	19.42
1230.7	2	19.481	19.46
1230.8	2	19.481	19.5
1230.9	2	19.481	19.54
1231	2	19.501	19.58
1231.1	2	19.501	19.61
1231.2	2	19.543	19.63
1231.3	2	19.564	19.65
1231.4	2	19.585	19.67
1231.5	2	19.585	19.69
1231.6	2	19.606	19.71
1231.7	2	19.669	19.73
1231.8	2	19.711	19.75
1231.9	2	19.753	19.77
1232	2	19.753	19.79
1232.1	2	19.899	19.81
1232.2	2	19.941	19.83
1232.3	2	19.983	19.85
1232.4	2	19.983	19.87
1232.5	2	19.983	19.89
1232.6	2	19.941	19.91
1232.7	2	19.92	19.93
1232.8	2	19.92	19.95

1232.9	2	19.879	19.97
1233	2	19.858	19.99
1233.1	2	19.816	19.975
1233.2	2	19.795	19.925
1233.3	2	19.795	19.875
1233.4	2	19.753	19.825
1233.5	2	19.711	19.772
1233.6	2	19.606	19.725
1233.7	2	19.606	19.675
1233.8	2	19.543	19.625
1233.9	2	19.46	19.575
1234	2	19.271	19.525
1234.1	2	19.166	19.4
1234.2	2	19.166	19.2
1234.3	2	19.062	19
1234.4	2	18.957	18.8
1234.5	2	18.747	18.6
1234.6	2	18.747	18.4
1234.7	2	18.643	18.2
1234.8	2	18.559	18
1234.9	2	18.433	17.8
1235	2	18.328	17.6
1235.1	2	18.182	17.4
1235.2	2	18.056	17.2
1235.3	2	17.91	17
1235.4	2	17.742	16.8
1235.5	2	17.553	16.6
1235.6	2	17.344	16.4
1235.7	2	17.072	16.2
1235.8	2	16.736	16
1235.9	2	16.401	15.8
1236	2	16.066	15.6
1236.1	2	15.71	15.375
1236.2	2	15.375	15.125
1236.3	2	15.04	14.875
1236.4	2	14.684	14.625
1236.5	2	14.328	14.375
1236.6	2	13.992	14.125
1236.7	2	13.699	13.875
1236.8	2	13.448	13.625
1236.9	2	13.217	13.375
1237	2	13.029	13.125
1237.1	2	12.861	12.85
1237.2	2	12.694	12.55
1237.3	2	12.547	12.25



1237.4	2	12.401	11.95
1237.5	2	12.254	11.65
1237.6	2	12.107	11.35
1237.7	2	11.961	11.05
1237.8	2	11.793	10.75
1237.9	2	11.605	10.45
1238	2	11.395	10.15
1238.1	2	11.165	9.9
1238.2	2	10.934	9.7
1238.3	2	10.725	9.5
1238.4	2	10.494	9.3
1238.5	2	10.222	9.1
1238.6	2	9.929	8.9
1238.7	2	9.636	8.7
1238.8	2	9.342	8.5
1238.9	2	9.049	8.3
1239	2	8.756	8.1
1239.1	2	8.463	7.9
1239.2	2	8.463	7.7
1239.3	2	7.876	7.5
1239.4	2	7.583	7.3
1239.5	2	7.269	7.1
1239.6	2	6.975	6.9
1239.7	2	6.661	6.7
1239.8	2	6.368	6.5
1239.9	2	6.075	6.3
1240	2	5.781	6.1
1240.1	2	5.467	5.9
1240.2	2	5.174	5.7
1240.3	2	4.902	5.5
1240.4	2	4.629	5.3
1240.5	2	4.336	5.1
1240.6	2	4.064	4.9
1240.7	2	4.064	4.7
1240.8	2	3.519	4.5
1240.9	2	3.268	4.3
1241	2	3.016	4.1
1241.1	2	3.016	3.925
1241.2	2	2.765	3.775
1241.3	2	2.262	3.625
1241.4	2	2.011	3.475
1241.5	2	1.822	3.325
1241.6	2	1.822	3.175
1241.7	2	1.697	3.025
1241.8	2	1.508	2.875

1241.9	2	1.424	2.725
1242	2	1.424	2.575
1242.1	2	1.341	2.41
1242.2	2	1.257	2.23
1242.3	2	1.11	2.05
1242.4	2	1.026	1.87
1242.5	2	1.026	1.69
1242.6	2	0.964	1.51
1242.7	2	0.901	1.33
1242.8	2	0.754	1.15
1242.9	2	0.754	0.97
1243	2	0.67	0.79
1243.1	2	0.607	0.665
1243.2	2	0.356	0.595
1243.3	2	0.168	0.525
1243.4	2	0.168	0.455
1243.5	2	0.168	0.385
1243.6	2	0.189	0.315
1243.7	2	0.084	0.245
1243.8	2	0.084	0.175
1243.9	2	0.126	0.105
1244	2	0.105	0.035
1244.1	2	0.063	0
1244.2	2	0.063	0
1244.3	2	0.084	0
1244.4	2	0.063	0
1244.5	2	0.042	0
1244.6	2	0.042	0
1244.7	2	0.042	0
1244.8	2	0.021	0
1244.9	2	0.021	0
1245	2	0.021	0
1245.1	2	0	0
1245.2	2	0.021	0
1245.3	2	0	0
1245.4	2	0	0
1245.5	2	0	0
1245.6	2	0	0
1245.7	2	0	0
1245.8	2	0	0
1245.9	2	0	0
1246	2	0	0
1246.1	2	0	0
1246.2	2	0	0
1246.3	2	0	0

1246.4	2	0	0
1246.5	2	0	0
1246.6	2	0	0
1246.7	2	0	0
1246.8	2	0	0
1246.9	2	0	0
1247	2	0	0
1247.1	2	-0.021	0
1247.2	2	-0.021	0
1247.3	2	0	0
1247.4	2	0	0
1247.5	2	0	0
1247.6	2	-0.021	0
1247.7	2	0	0
1247.8	2	0	0
1247.9	2	-0.021	0
1248	2	0	0
1248.1	2	0	0
1248.2	2	0	0
1248.3	2	0	0
1248.4	2	0	0
1248.5	2	0	0
1248.6	2	0	0
1248.7	2	0	0
1248.8	2	0	0
1248.9	2	0	0
1249	2	-0.021	0
1249.1	2	0	0
1249.2	2	0	0
1249.3	2	-0.021	0
1249.4	2	0	0
1249.5	2	-0.021	0
1249.6	2	-0.021	0
1249.7	2	-0.021	0
1249.8	2	-0.021	0
1249.9	2	0	0
1250	2	-0.021	0
1250.1	2	-0.021	0
1250.2	2	0	0
1250.3	2	0	0
1250.4	2	0	0
1250.5	2	-0.021	0
1250.6	2	-0.021	0
1250.7	2	-0.021	0
1250.8	2	0	0

1250.9	2	0	0
1251	2	0	0
1251.1	2	0	0.05
1251.2	2	0.021	0.15
1251.3	2	0.042	0.25
1251.4	2	0.042	0.35
1251.5	2	0.063	0.45
1251.6	2	0.063	0.55
1251.7	2	0.063	0.65
1251.8	2	0.063	0.75
1251.9	2	0.084	0.85
1252	2	0.084	0.95
1252.1	2	0.084	1
1252.2	2	0.084	1
1252.3	2	0.105	1
1252.4	2	0.105	1
1252.5	2	0.126	1
1252.6	2	0.147	1
1252.7	2	0.209	1
1252.8	2	0.23	1
1252.9	2	0.23	1
1253	2	0.272	1
1253.1	2	0.293	1
1253.2	2	0.335	1
1253.3	2	0.335	1
1253.4	2	0.356	1
1253.5	2	0.377	1
1253.6	2	0.398	1
1253.7	2	0.419	1
1253.8	2	0.419	1
1253.9	2	0.44	1
1254	2	0.461	1
1254.1	2	0.482	1
1254.2	2	0.482	1
1254.3	2	0.482	1
1254.4	2	0.503	1
1254.5	2	0.503	1
1254.6	2	0.524	1
1254.7	2	0.566	1
1254.8	2	0.607	1
1254.9	2	0.628	1
1255	2	0.67	1
1255.1	2	0.691	1
1255.2	2	0.712	1
1255.3	2	0.733	1

1255.4	2	0.754	1
1255.5	2	0.775	1
1255.6	2	0.817	1
1255.7	2	0.838	1
1255.8	2	0.859	1
1255.9	2	0.88	1
1256	2	0.901	1
1256.1	2	0.922	1.03
1256.2	2	0.943	1.09
1256.3	2	0.984	1.15
1256.4	2	1.026	1.21
1256.5	2	1.089	1.27
1256.6	2	1.131	1.33
1256.7	2	1.194	1.39
1256.8	2	1.278	1.45
1256.9	2	1.403	1.51
1257	2	1.529	1.57
1257.1	2	1.676	1.67
1257.2	2	1.801	1.81
1257.3	2	1.948	1.95
1257.4	2	2.095	2.09
1257.5	2	2.22	2.23
1257.6	2	2.346	2.37
1257.7	2	2.451	2.51
1257.8	2	2.576	2.65
1257.9	2	2.702	2.79
1258	2	2.807	2.93
1258.1	2	2.953	3.05
1258.2	2	3.079	3.15
1258.3	2	3.205	3.25
1258.4	2	3.351	3.35
1258.5	2	3.477	3.45
1258.6	2	3.603	3.55
1258.7	2	3.749	3.65
1258.8	2	3.896	3.75
1258.9	2	4.043	3.85
1259	2	4.21	3.95
1259.1	2	4.357	4.05
1259.2	2	4.525	4.15
1259.3	2	4.671	4.25
1259.4	2	4.671	4.35
1259.5	2	4.964	4.45
1259.6	2	5.111	4.55
1259.7	2	5.237	4.65
1259.8	2	5.237	4.75

1259.9	2	5.362	4.85
1260	2	5.614	4.95
1260.1	2	5.718	5.065
1260.2	2	5.802	5.195
1260.3	2	5.802	5.325
1260.4	2	5.928	5.455
1260.5	2	6.012	5.585
1260.6	2	6.075	5.715
1260.7	2	6.075	5.845
1260.8	2	6.137	5.975
1260.9	2	6.263	6.105
1261	2	6.326	6.235
1261.1	2	6.326	6.385
1261.2	2	6.431	6.555
1261.3	2	6.535	6.725
1261.4	2	6.724	6.895
1261.5	2	6.829	7.065
1261.6	2	6.829	7.235
1261.7	2	6.933	7.405
1261.8	2	7.164	7.575
1261.9	2	7.31	7.745
1262	2	7.31	7.915
1262.1	2	7.478	8.1
1262.2	2	7.646	8.3
1262.3	2	8.044	8.5
1262.4	2	8.044	8.7
1262.5	2	8.253	8.9
1262.6	2	8.463	9.1
1262.7	2	8.672	9.3
1262.8	2	9.07	9.5
1262.9	2	9.07	9.7
1263	2	9.279	9.9
1263.1	2	9.468	10.025
1263.2	2	9.866	10.075
1263.3	2	9.866	10.125
1263.4	2	10.034	10.175
1263.5	2	10.18	10.225
1263.6	2	10.306	10.275
1263.7	2	10.369	10.325
1263.8	2	10.369	10.375
1263.9	2	10.306	10.425
1264	2	10.264	10.475
1264.1	2	10.201	10.45
1264.2	2	10.159	10.35
1264.3	2	10.075	10.25

1264.4	2	9.992	10.15
1264.5	2	9.887	10.05
1264.6	2	9.761	9.95
1264.7	2	9.636	9.85
1264.8	2	9.489	9.75
1264.9	2	9.342	9.65
1265	2	9.133	9.55
1265.1	2	8.965	9.45
1265.2	2	8.965	9.35
1265.3	2	8.714	9.25
1265.4	2	8.609	9.15
1265.5	2	8.525	9.05
1265.6	2	8.442	8.95
1265.7	2	8.379	8.85
1265.8	2	8.316	8.75
1265.9	2	8.253	8.65
1266	2	8.19	8.55
1266.1	2	8.127	8.455
1266.2	2	8.085	8.365
1266.3	2	8.044	8.275
1266.4	2	8.002	8.185
1266.5	2	8.002	8.095
1266.6	2	8.002	8.005
1266.7	2	8.023	7.915
1266.8	2	8.044	7.825
1266.9	2	8.106	7.735
1267	2	8.169	7.645
1267.1	2	8.274	7.66
1267.2	2	8.379	7.78
1267.3	2	8.504	7.9
1267.4	2	8.63	8.02
1267.5	2	8.756	8.14
1267.6	2	8.902	8.26
1267.7	2	9.07	8.38
1267.8	2	9.238	8.5
1267.9	2	9.405	8.62
1268	2	9.594	8.74
1268.1	2	9.782	8.91
1268.2	2	9.95	9.13
1268.3	2	10.138	9.35
1268.4	2	10.327	9.57
1268.5	2	10.515	9.79
1268.6	2	10.683	10.01
1268.7	2	10.892	10.23
1268.8	2	11.081	10.45

1268.9	2	11.081	10.67
1269	2	11.458	10.89
1269.1	2	11.646	11.15
1269.2	2	11.877	11.45
1269.3	2	12.107	11.75
1269.4	2	12.107	12.05
1269.5	2	12.631	12.35
1269.6	2	12.903	12.65
1269.7	2	13.196	12.95
1269.8	2	13.196	13.25
1269.9	2	13.804	13.55
1270	2	14.118	13.85
1270.1	2	14.432	14.15
1270.2	2	14.432	14.45
1270.3	2	14.747	14.75
1270.4	2	15.417	15.05
1270.5	2	15.752	15.35
1270.6	2	16.087	15.65
1270.7	2	16.087	15.95
1270.8	2	16.443	16.25
1270.9	2	17.114	16.55
1271	2	17.428	16.85
1271.1	2	17.428	17.125
1271.2	2	17.742	17.375
1271.3	2	18.056	17.625
1271.4	2	18.559	17.875
1271.5	2	18.559	18.125
1271.6	2	18.768	18.375
1271.7	2	18.936	18.625
1271.8	2	19.25	18.875
1271.9	2	19.25	19.125
1272	2	19.397	19.375
1272.1	2	19.564	19.575
1272.2	2	19.711	19.725
1272.3	2	20.025	19.875
1272.4	2	20.025	20.025
1272.5	2	20.193	20.175
1272.6	2	20.381	20.325
1272.7	2	20.716	20.475
1272.8	2	20.716	20.625
1272.9	2	20.905	20.775
1273	2	21.093	20.925
1273.1	2	21.282	21.04
1273.2	2	21.47	21.12
1273.3	2	21.659	21.2



1273.4	2	21.806	21.28
1273.5	2	21.952	21.36
1273.6	2	22.036	21.44
1273.7	2	22.12	21.52
1273.8	2	22.204	21.6
1273.9	2	22.287	21.68
1274	2	22.371	21.76
1274.1	2	22.455	21.82
1274.2	2	22.539	21.86
1274.3	2	22.623	21.9
1274.4	2	22.685	21.94
1274.5	2	22.748	21.98
1274.6	2	22.832	22.02
1274.7	2	22.895	22.06
1274.8	2	22.958	22.1
1274.9	2	23.021	22.14
1275	2	23.062	22.18
1275.1	2	23.083	22.24
1275.2	2	23.083	22.32
1275.3	2	23.062	22.4
1275.4	2	23.021	22.48
1275.5	2	22.958	22.56
1275.6	2	22.895	22.64
1275.7	2	22.853	22.72
1275.8	2	22.811	22.8
1275.9	2	22.79	22.88
1276	2	22.79	22.96
1276.1	2	22.832	23.03
1276.2	2	22.895	23.09
1276.3	2	23	23.15
1276.4	2	23.146	23.21
1276.5	2	23.293	23.27
1276.6	2	23.46	23.33
1276.7	2	23.628	23.39
1276.8	2	23.817	23.45
1276.9	2	23.984	23.51
1277	2	24.173	23.57
1277.1	2	24.34	23.625
1277.2	2	24.445	23.675
1277.3	2	24.529	23.725
1277.4	2	24.571	23.775
1277.5	2	24.571	23.825
1277.6	2	24.55	23.875
1277.7	2	24.487	23.925
1277.8	2	24.445	23.975

1277.9	2	24.382	24.025
1278	2	24.382	24.075
1278.1	2	24.34	24.12
1278.2	2	24.298	24.16
1278.3	2	24.277	24.2
1278.4	2	24.256	24.24
1278.5	2	24.256	24.28
1278.6	2	24.256	24.32
1278.7	2	24.298	24.36
1278.8	2	24.34	24.4
1278.9	2	24.34	24.44
1279	2	24.382	24.48
1279.1	2	24.445	24.5
1279.2	2	24.445	24.5
1279.3	2	24.445	24.5
1279.4	2	24.445	24.5
1279.5	2	24.424	24.5
1279.6	2	24.424	24.5
1279.7	2	24.403	24.5
1279.8	2	24.403	24.5
1279.9	2	24.382	24.5
1280	2	24.277	24.5
1280.1	2	24.235	24.475
1280.2	2	24.173	24.425
1280.3	2	24.173	24.375
1280.4	2	24.11	24.325
1280.5	2	24.005	24.275
1280.6	2	23.984	24.225
1280.7	2	23.984	24.175
1280.8	2	23.963	24.125
1280.9	2	23.963	24.075
1281	2	23.921	24.025
1281.1	2	23.921	23.975
1281.2	2	23.879	23.925
1281.3	2	23.837	23.875
1281.4	2	23.796	23.825
1281.5	2	23.691	23.772
1281.6	2	23.691	23.725
1281.7	2	23.67	23.675
1281.8	2	23.628	23.625
1281.9	2	23.565	23.575
1282	2	23.565	23.525
1282.1	2	23.544	23.5
1282.2	2	23.502	23.5
1282.3	2	23.481	23.5

1282.4	2	23.439	23.5
1282.5	2	23.419	23.5
1282.6	2	23.419	23.5
1282.7	2	23.46	23.5
1282.8	2	23.481	23.5
1282.9	2	23.523	23.5
1283	2	23.565	23.5
1283.1	2	23.586	23.5
1283.2	2	23.607	23.5
1283.3	2	23.628	23.5
1283.4	2	23.628	23.5
1283.5	2	23.607	23.5
1283.6	2	23.607	23.5
1283.7	2	23.586	23.5
1283.8	2	23.544	23.5
1283.9	2	23.502	23.5
1284	2	23.481	23.5
1284.1	2	23.439	23.5
1284.2	2	23.398	23.5
1284.3	2	23.377	23.5
1284.4	2	23.356	23.5
1284.5	2	23.314	23.5
1284.6	2	23.314	23.5
1284.7	2	23.293	23.5
1284.8	2	23.293	23.5
1284.9	2	23.314	23.5
1285	2	23.356	23.5
1285.1	2	23.377	23.5
1285.2	2	23.419	23.5
1285.3	2	23.481	23.5
1285.4	2	23.523	23.5
1285.5	2	23.565	23.5
1285.6	2	23.586	23.5
1285.7	2	23.607	23.5
1285.8	2	23.628	23.5
1285.9	2	23.649	23.5
1286	2	23.67	23.5
1286.1	2	23.691	23.5
1286.2	2	23.691	23.5
1286.3	2	23.712	23.5
1286.4	2	23.712	23.5
1286.5	2	23.733	23.5
1286.6	2	23.754	23.5
1286.7	2	23.775	23.5
1286.8	2	23.796	23.5

1286.9	2	23.817	23.5
1287	2	23.817	23.5
1287.1	2	23.817	23.525
1287.2	2	23.796	23.575
1287.3	2	23.775	23.625
1287.4	2	23.754	23.675
1287.5	2	23.733	23.725
1287.6	2	23.733	23.775
1287.7	2	23.691	23.825
1287.8	2	23.67	23.875
1287.9	2	23.649	23.925
1288	2	23.628	23.975
1288.1	2	23.628	24.005
1288.2	2	23.607	24.015
1288.3	2	23.586	24.025
1288.4	2	23.565	24.035
1288.5	2	23.565	24.045
1288.6	2	23.565	24.055
1288.7	2	23.586	24.065
1288.8	2	23.649	24.075
1288.9	2	23.649	24.085
1289	2	23.712	24.095
1289.1	2	23.879	24.12
1289.2	2	23.984	24.16
1289.3	2	24.068	24.2
1289.4	2	24.068	24.24
1289.5	2	24.173	24.28
1289.6	2	24.34	24.32
1289.7	2	24.424	24.36
1289.8	2	24.424	24.4
1289.9	2	24.508	24.44
1290	2	24.592	24.48
1290.1	2	24.738	24.51
1290.2	2	24.78	24.53
1290.3	2	24.78	24.55
1290.4	2	24.822	24.57
1290.5	2	24.843	24.59
1290.6	2	24.885	24.61
1290.7	2	24.885	24.63
1290.8	2	24.906	24.65
1290.9	2	24.906	24.67
1291	2	24.927	24.69
1291.1	2	24.927	24.715
1291.2	2	24.927	24.745
1291.3	2	24.927	24.775

1291.4	2	24.948	24.805
1291.5	2	24.969	24.835
1291.6	2	24.969	24.865
1291.7	2	24.969	24.895
1291.8	2	24.99	24.925
1291.9	2	24.99	24.955
1292	2	25.01	24.985
1292.1	2	25.01	25.02
1292.2	2	25.031	25.06
1292.3	2	25.031	25.1
1292.4	2	25.052	25.14
1292.5	2	25.073	25.18
1292.6	2	25.073	25.22
1292.7	2	25.094	25.26
1292.8	2	25.115	25.3
1292.9	2	25.136	25.34
1293	2	25.157	25.38
1293.1	2	25.199	25.41
1293.2	2	25.241	25.43
1293.3	2	25.283	25.45
1293.4	2	25.346	25.47
1293.5	2	25.429	25.49
1293.6	2	25.471	25.51
1293.7	2	25.534	25.53
1293.8	2	25.597	25.55
1293.9	2	25.639	25.57
1294	2	25.681	25.59
1294.1	2	25.723	25.605
1294.2	2	25.744	25.615
1294.3	2	25.744	25.625
1294.4	2	25.765	25.635
1294.5	2	25.765	25.645
1294.6	2	25.765	25.655
1294.7	2	25.765	25.665
1294.8	2	25.765	25.675
1294.9	2	25.744	25.685
1295	2	25.744	25.695
1295.1	2	25.744	25.715
1295.2	2	25.723	25.745
1295.3	2	25.723	25.775
1295.4	2	25.723	25.805
1295.5	2	25.723	25.835
1295.6	2	25.744	25.865
1295.7	2	25.786	25.895
1295.8	2	25.848	25.925

1295.9	2	25.89	25.955
1296	2	25.953	25.985
1296.1	2	26.037	26.01
1296.2	2	26.1	26.03
1296.3	2	26.163	26.05
1296.4	2	26.246	26.07
1296.5	2	26.33	26.09
1296.6	2	26.393	26.11
1296.7	2	26.498	26.13
1296.8	2	26.581	26.15
1296.9	2	26.686	26.17
1297	2	26.791	26.19
1297.1	2	26.896	26.24
1297.2	2	27	26.32
1297.3	2	27	26.4
1297.4	2	27.189	26.48
1297.5	2	27.231	26.56
1297.6	2	27.294	26.64
1297.7	2	27.294	26.72
1297.8	2	27.398	26.8
1297.9	2	27.461	26.88
1298	2	27.524	26.96
1298.1	2	27.608	27.04
1298.2	2	27.608	27.12
1298.3	2	27.755	27.2
1298.4	2	27.817	27.28
1298.5	2	27.901	27.36
1298.6	2	27.901	27.44
1298.7	2	27.964	27.52
1298.8	2	28.111	27.6
1298.9	2	28.194	27.68
1299	2	28.194	27.76
1299.1	2	28.257	27.825
1299.2	2	28.32	27.875
1299.3	2	28.467	27.925
1299.4	2	28.53	27.975
1299.5	2	28.53	28.025
1299.6	2	28.592	28.075
1299.7	2	28.655	28.125
1299.8	2	28.781	28.175
1299.9	2	28.781	28.225
1300	2	28.823	28.275
1300.1	2	28.886	28.335
1300.2	2	28.928	28.405
1300.3	2	29.032	28.475

1300.4	2	29.032	28.545
1300.5	2	29.074	28.615
1300.6	2	29.137	28.685
1300.7	2	29.263	28.755
1300.8	2	29.263	28.825
1300.9	2	29.346	28.895
1301	2	29.409	28.965
1301.1	2	29.472	29.005
1301.2	2	29.535	29.015
1301.3	2	29.577	29.025
1301.4	2	29.619	29.035
1301.5	2	29.661	29.045
1301.6	2	29.682	29.055
1301.7	2	29.724	29.065
1301.8	2	29.744	29.075
1301.9	2	29.765	29.085
1302	2	29.786	29.095
1302.1	2	29.765	29.095
1302.2	2	29.744	29.085
1302.3	2	29.682	29.075
1302.4	2	29.64	29.065
1302.5	2	29.556	29.055
1302.6	2	29.493	29.045
1302.7	2	29.409	29.035
1302.8	2	29.326	29.025
1302.9	2	29.242	29.015
1303	2	29.137	29.005
1303.1	2	29.053	28.95
1303.2	2	28.969	28.85
1303.3	2	28.886	28.75
1303.4	2	28.802	28.65
1303.5	2	28.718	28.55
1303.6	2	28.634	28.45
1303.7	2	28.55	28.35
1303.8	2	28.467	28.25
1303.9	2	28.383	28.15
1304	2	28.299	28.05
1304.1	2	28.299	27.835
1304.2	2	28.111	27.505
1304.3	2	27.943	27.175
1304.4	2	27.65	26.845
1304.5	2	27.315	26.515
1304.6	2	26.959	26.185
1304.7	2	26.561	25.855
1304.8	2	26.184	25.525

1304.9	2	25.806	25.195
1305	2	25.408	24.865
1305.1	2	25.01	24.535
1305.2	2	24.612	24.205
1305.3	2	24.215	23.875
1305.4	2	23.817	23.545
1305.5	2	23.419	23.215
1305.6	2	23.041	22.885
1305.7	2	22.643	22.555
1305.8	2	22.287	22.225
1305.9	2	21.91	21.895
1306	2	21.575	21.565
1306.1	2	21.198	21.235
1306.2	2	20.8	20.905
1306.3	2	20.423	20.575
1306.4	2	20.423	20.245
1306.5	2	19.648	19.915
1306.6	2	19.25	19.585
1306.7	2	18.873	19.255
1306.8	2	18.496	18.925
1306.9	2	18.496	18.595
1307	2	17.805	18.265
1307.1	2	17.47	17.935
1307.2	2	17.155	17.605
1307.3	2	17.155	17.275
1307.4	2	16.862	16.945
1307.5	2	16.255	16.615
1307.6	2	15.941	16.285
1307.7	2	15.584	15.955
1307.8	2	15.584	15.625
1307.9	2	14.726	15.295
1308	2	14.286	14.965
1308.1	2	13.909	14.635
1308.2	2	13.909	14.305
1308.3	2	13.553	13.975
1308.4	2	12.945	13.645
1308.5	2	12.631	13.315
1308.6	2	12.631	12.985
1308.7	2	12.296	12.655
1308.8	2	11.982	12.325
1308.9	2	11.29	11.995
1309	2	11.29	11.665
1309.1	2	10.955	11.335
1309.2	2	10.62	11.005
1309.3	2	9.95	10.675



1309.4	2	9.615	10.345
1309.5	2	9.615	10.015
1309.6	2	9.279	9.685
1309.7	2	8.944	9.355
1309.8	2	8.253	9.025
1309.9	2	8.253	8.695
1310	2	7.897	8.365
1310.1	2	7.562	8.035
1310.2	2	7.227	7.705
1310.3	2	6.535	7.375
1310.4	2	6.535	7.045
1310.5	2	6.2	6.715
1310.6	2	5.865	6.385
1310.7	2	5.53	6.055
1310.8	2	5.216	5.725
1310.9	2	4.902	5.395
1311	2	4.566	5.065
1311.1	2	4.231	4.735
1311.2	2	3.875	4.405
1311.3	2	3.54	4.075
1311.4	2	3.205	3.745
1311.5	2	2.87	3.415
1311.6	2	2.514	3.085
1311.7	2	2.199	2.755
1311.8	2	1.864	2.425
1311.9	2	1.529	2.075
1312	2	1.173	1.765
1312.1	2	0.817	1.52
1312.2	2	0.482	1.36
1312.3	2	0.23	1.2
1312.4	2	0.189	1.04
1312.5	2	0.189	0.88
1312.6	2	0.126	0.72
1312.7	2	0.084	0.56
1312.8	2	0.105	0.4
1312.9	2	0.084	0.24
1313	2	0.042	0.08
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1313.2	2	0.063	0
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1316.6	2	0	0
1316.7	2	-0.021	0
1316.8	2	-0.021	0
1316.9	2	0	0
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1317.9	2	0	0
1318	2	-0.021	0
1318.1	2	0	0
1318.2	2	0	0
1318.3	2	0	0

1318.4	2	0	0
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1319.5	2	0	0
1319.6	2	-0.021	0
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1319.8	2	-0.021	0
1319.9	2	-0.021	0
1320	2	0	0
1320.1	2	0	0
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1320.3	2	0	0
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1320.5	2	-0.021	0
1320.6	2	0	0
1320.7	2	-0.021	0
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1336.3	2	0.042	0

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1336.7	2	0.105	0
1336.8	2	0.168	0
1336.9	2	0.168	0
1337	2	0.335	0
1337.1	2	0.733	0.075
1337.2	2	0.922	0.225
1337.3	2	0.922	0.375
1337.4	2	1.11	0.525
1337.5	2	1.32	0.675
1337.6	2	1.739	0.825
1337.7	2	1.739	0.975
1337.8	2	1.969	1.125
1337.9	2	2.178	1.275
1338	2	2.388	1.425
1338.1	2	2.807	1.665
1338.2	2	2.807	1.995
1338.3	2	2.995	2.325
1338.4	2	3.205	2.655
1338.5	2	3.435	2.985
1338.6	2	3.666	3.315
1338.7	2	3.938	3.645
1338.8	2	4.21	3.975
1338.9	2	4.483	4.305
1339	2	5.09	4.635
1339.1	2	5.09	4.965
1339.2	2	5.383	5.295
1339.3	2	5.698	5.625
1339.4	2	5.991	5.955
1339.5	2	6.263	6.285
1339.6	2	6.535	6.615
1339.7	2	6.787	6.945
1339.8	2	7.017	7.275
1339.9	2	7.248	7.605
1340	2	7.457	7.935
1340.1	2	7.667	8.265
1340.2	2	7.855	8.595
1340.3	2	8.065	8.925
1340.4	2	8.274	9.255
1340.5	2	8.483	9.585
1340.6	2	8.714	9.915
1340.7	2	8.965	10.245
1340.8	2	9.238	10.575

1340.9	2	9.51	10.905
1341	2	9.782	11.235
1341.1	2	10.034	11.49
1341.2	2	10.285	11.67
1341.3	2	10.599	11.85
1341.4	2	10.934	12.03
1341.5	2	11.332	12.21
1341.6	2	11.751	12.39
1341.7	2	12.17	12.57
1341.8	2	12.589	12.75
1341.9	2	12.987	12.93
1342	2	13.385	13.11
1342.1	2	13.762	13.295
1342.2	2	14.118	13.485
1342.3	2	14.474	13.675
1342.4	2	14.788	13.865
1342.5	2	15.103	14.055
1342.6	2	15.417	14.245
1342.7	2	15.71	14.435
1342.8	2	16.003	14.625
1342.9	2	16.297	14.815
1343	2	16.611	15.005
1343.1	2	16.611	15.185
1343.2	2	17.197	15.355
1343.3	2	17.428	15.525
1343.4	2	17.637	15.695
1343.5	2	17.826	15.865
1343.6	2	17.993	16.035
1343.7	2	18.161	16.205
1343.8	2	18.328	16.375
1343.9	2	18.496	16.545
1344	2	18.643	16.715
1344.1	2	18.81	16.875
1344.2	2	18.957	17.025
1344.3	2	18.957	17.175
1344.4	2	19.271	17.325
1344.5	2	19.397	17.475
1344.6	2	19.481	17.625
1344.7	2	19.481	17.775
1344.8	2	19.648	17.925
1344.9	2	19.732	18.075
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1345.1	2	19.816	18.36
1345.2	2	19.899	18.48
1345.3	2	20.067	18.6



1345.4	2	20.151	18.72
1345.5	2	20.214	18.84
1345.6	2	20.214	18.96
1345.7	2	20.256	19.08
1345.8	2	20.339	19.2
1345.9	2	20.381	19.32
1346	2	20.381	19.44
1346.1	2	20.444	19.54
1346.2	2	20.591	19.62
1346.3	2	20.674	19.7
1346.4	2	20.779	19.78
1346.5	2	20.779	19.86
1346.6	2	20.863	19.94
1346.7	2	21.072	20.02
1346.8	2	21.177	20.1
1346.9	2	21.177	20.18
1347	2	21.282	20.26
1347.1	2	21.387	20.35
1347.2	2	21.596	20.45
1347.3	2	21.68	20.55
1347.4	2	21.68	20.65
1347.5	2	21.722	20.75
1347.6	2	21.743	20.85
1347.7	2	21.743	20.95
1347.8	2	21.743	21.05
1347.9	2	21.743	21.15
1348	2	21.722	21.25
1348.1	2	21.701	21.33
1348.2	2	21.68	21.39
1348.3	2	21.659	21.45
1348.4	2	21.617	21.51
1348.5	2	21.596	21.57
1348.6	2	21.575	21.63
1348.7	2	21.575	21.69
1348.8	2	21.575	21.75
1348.9	2	21.596	21.81
1349	2	21.617	21.87
1349.1	2	21.659	21.91
1349.2	2	21.743	21.93
1349.3	2	21.806	21.95
1349.4	2	21.868	21.97
1349.5	2	21.931	21.99
1349.6	2	22.015	22.01
1349.7	2	22.078	22.03
1349.8	2	22.141	22.05

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1350.3	2	22.057	22.175
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1350.5	2	21.931	22.235
1350.6	2	21.868	22.265
1350.7	2	21.806	22.297
1350.8	2	21.743	22.325
1350.9	2	21.701	22.355
1351	2	21.659	22.385
1351.1	2	21.617	22.38
1351.2	2	21.575	22.34
1351.3	2	21.575	22.3
1351.4	2	21.554	22.26
1351.5	2	21.554	22.22
1351.6	2	21.575	22.18
1351.7	2	21.596	22.14
1351.8	2	21.617	22.1
1351.9	2	21.659	22.06
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1352.6	2	21.533	21.78
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1353	2	21.366	21.62
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1355.7	2	19.627	20.175
1355.8	2	19.543	20.125
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1356.1	2	19.397	19.98
1356.2	2	19.25	19.94
1356.3	2	19.166	19.9
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1397.6	3	19.355	19.27
1397.7	3	19.543	19.53
1397.8	3	19.711	19.79
1397.9	3	19.899	20.05
1398	3	20.067	20.31
1398.1	3	20.256	20.57
1398.2	3	20.423	20.75
1398.3	3	20.591	20.85
1398.4	3	20.737	20.95
1398.5	3	20.884	21.05
1398.6	3	20.989	21.15
1398.7	3	21.093	21.25
1398.8	3	21.156	21.35
1398.9	3	21.198	21.45
1399	3	21.219	21.55
1399.1	3	21.219	21.65
1399.2	3	21.261	21.735
1399.3	3	21.324	21.805

1399.4	3	21.429	21.875
1399.5	3	21.596	21.945
1399.6	3	21.764	22.015
1399.7	3	21.952	22.085
1399.8	3	22.141	22.155
1399.9	3	22.287	22.225
1400	3	22.413	22.295
1400.1	3	22.476	22.365
1400.2	3	22.518	22.405
1400.3	3	22.539	22.415
1400.4	3	22.539	22.425
1400.5	3	22.518	22.435
1400.6	3	22.476	22.445
1400.7	3	22.413	22.455
1400.8	3	22.329	22.465
1400.9	3	22.246	22.475
1401	3	22.162	22.485
1401.1	3	22.036	22.495
1401.2	3	21.931	22.48
1401.3	3	21.848	22.44
1401.4	3	21.806	22.4
1401.5	3	21.785	22.36
1401.6	3	21.743	22.32
1401.7	3	21.722	22.28
1401.8	3	21.68	22.24
1401.9	3	21.638	22.2
1402	3	21.596	22.16
1402.1	3	21.575	22.12
1402.2	3	21.512	22.07
1402.3	3	21.491	22.01
1402.4	3	21.45	21.95
1402.5	3	21.408	21.89
1402.6	3	21.345	21.83
1402.7	3	21.303	21.77
1402.8	3	21.24	21.71
1402.9	3	21.177	21.65
1403	3	21.114	21.59
1403.1	3	21.052	21.53
1403.2	3	20.989	21.47
1403.3	3	20.989	21.41
1403.4	3	20.863	21.35
1403.5	3	20.779	21.29
1403.6	3	20.695	21.23
1403.7	3	20.695	21.17
1403.8	3	20.612	21.11

1403.9	3	20.444	21.05
1404	3	20.36	20.99
1404.1	3	20.297	20.93
1404.2	3	20.297	20.875
1404.3	3	20.214	20.825
1404.4	3	20.172	20.775
1404.5	3	20.151	20.725
1404.6	3	20.151	20.675
1404.7	3	20.109	20.625
1404.8	3	20.004	20.575
1404.9	3	19.962	20.525
1405	3	19.962	20.475
1405.1	3	19.899	20.425
1405.2	3	19.816	20.37
1405.3	3	19.669	20.31
1405.4	3	19.564	20.25
1405.5	3	19.564	20.19
1405.6	3	19.481	20.13
1405.7	3	19.271	20.07
1405.8	3	19.166	20.01
1405.9	3	19.166	19.95
1406	3	19.041	19.89
1406.1	3	18.936	19.83
1406.2	3	18.705	19.66
1406.3	3	18.705	19.38
1406.4	3	18.601	19.1
1406.5	3	18.475	18.82
1406.6	3	18.308	18.54
1406.7	3	17.868	18.26
1406.8	3	17.868	17.98
1406.9	3	17.595	17.7
1407	3	17.302	17.42
1407.1	3	16.716	17.14
1407.2	3	16.716	16.895
1407.3	3	16.485	16.685
1407.4	3	16.318	16.475
1407.5	3	16.192	16.265
1407.6	3	16.066	16.055
1407.7	3	15.941	15.845
1407.8	3	15.815	15.635
1407.9	3	15.71	15.425
1408	3	15.584	15.215
1408.1	3	15.459	15.005
1408.2	3	15.333	14.9
1408.3	3	15.207	14.9

1408.4	3	15.082	14.9
1408.5	3	14.956	14.9
1408.6	3	14.809	14.9
1408.7	3	14.705	14.9
1408.8	3	14.6	14.9
1408.9	3	14.516	14.9
1409	3	14.432	14.9
1409.1	3	14.349	14.9
1409.2	3	14.265	14.915
1409.3	3	14.202	14.945
1409.4	3	14.16	14.975
1409.5	3	14.118	15.005
1409.6	3	14.118	15.035
1409.7	3	14.181	15.065
1409.8	3	14.244	15.095
1409.9	3	14.328	15.125
1410	3	14.432	15.155
1410.1	3	14.6	15.185
1410.2	3	14.767	15.215
1410.3	3	14.914	15.245
1410.4	3	14.998	15.275
1410.5	3	15.061	15.305
1410.6	3	15.082	15.335
1410.7	3	15.103	15.365
1410.8	3	15.103	15.395
1410.9	3	15.145	15.425
1411	3	15.207	15.455
1411.1	3	15.312	15.485
1411.2	3	15.417	15.525
1411.3	3	15.543	15.575
1411.4	3	15.668	15.625
1411.5	3	15.794	15.675
1411.6	3	15.92	15.725
1411.7	3	16.003	15.775
1411.8	3	16.066	15.825
1411.9	3	16.108	15.875
1412	3	16.15	15.925
1412.1	3	16.213	15.975
1412.2	3	16.297	16.055
1412.3	3	16.401	16.165
1412.4	3	16.401	16.275
1412.5	3	16.653	16.385
1412.6	3	16.778	16.495
1412.7	3	16.904	16.605
1412.8	3	17.009	16.715

1412.9	3	17.009	16.825
1413	3	17.218	16.935
1413.1	3	17.323	17.045
1413.2	3	17.428	17.2
1413.3	3	17.428	17.4
1413.4	3	17.7	17.6
1413.5	3	17.847	17.8
1413.6	3	18.014	18
1413.7	3	18.014	18.2
1413.8	3	18.203	18.4
1413.9	3	18.622	18.6
1414	3	18.852	18.8
1414.1	3	19.083	19
1414.2	3	19.083	19.2
1414.3	3	19.334	19.4
1414.4	3	19.858	19.6
1414.5	3	20.151	19.8
1414.6	3	20.151	20
1414.7	3	20.423	20.2
1414.8	3	21.01	20.4
1414.9	3	21.261	20.6
1415	3	21.261	20.8
1415.1	3	21.47	21
1415.2	3	21.638	21.18
1415.3	3	21.994	21.34
1415.4	3	21.994	21.5
1415.5	3	22.183	21.66
1415.6	3	22.371	21.82
1415.7	3	22.539	21.98
1415.8	3	22.811	22.14
1415.9	3	22.811	22.3
1416	3	22.895	22.46
1416.1	3	22.958	22.62
1416.2	3	22.979	22.71
1416.3	3	22.979	22.73
1416.4	3	22.937	22.75
1416.5	3	22.895	22.77
1416.6	3	22.853	22.79
1416.7	3	22.832	22.81
1416.8	3	22.79	22.83
1416.9	3	22.748	22.85
1417	3	22.727	22.87
1417.1	3	22.706	22.89
1417.2	3	22.706	22.89
1417.3	3	22.748	22.87



1417.4	3	22.832	22.85
1417.5	3	22.937	22.83
1417.6	3	23.062	22.81
1417.7	3	23.188	22.79
1417.8	3	23.314	22.77
1417.9	3	23.419	22.75
1418	3	23.46	22.73
1418.1	3	23.502	22.71
1418.2	3	23.481	22.695
1418.3	3	23.419	22.685
1418.4	3	23.356	22.675
1418.5	3	23.293	22.665
1418.6	3	23.209	22.655
1418.7	3	23.083	22.645
1418.8	3	22.979	22.635
1418.9	3	22.874	22.625
1419	3	22.769	22.615
1419.1	3	22.643	22.605
1419.2	3	22.539	22.535
1419.3	3	22.434	22.405
1419.4	3	22.308	22.275
1419.5	3	22.204	22.145
1419.6	3	22.204	22.015
1419.7	3	21.994	21.885
1419.8	3	21.868	21.755
1419.9	3	21.764	21.625
1420	3	21.659	21.495
1420.1	3	21.533	21.365
1420.2	3	21.408	21.185
1420.3	3	21.261	20.955
1420.4	3	21.072	20.725
1420.5	3	20.821	20.495
1420.6	3	20.444	20.265
1420.7	3	20.004	20.035
1420.8	3	19.543	19.805
1420.9	3	19.103	19.575
1421	3	18.643	19.345
1421.1	3	18.182	19.115
1421.2	3	17.721	18.905
1421.3	3	17.323	18.715
1421.4	3	17.072	18.525
1421.5	3	16.883	18.335
1421.6	3	16.736	18.145
1421.7	3	16.569	17.955
1421.8	3	16.443	17.765

1421.9	3	16.297	17.575
1422	3	16.297	17.385
1422.1	3	16.024	17.195
1422.2	3	15.899	17.035
1422.3	3	15.773	16.905
1422.4	3	15.773	16.775
1422.5	3	15.522	16.645
1422.6	3	15.396	16.515
1422.7	3	15.291	16.385
1422.8	3	15.249	16.255
1422.9	3	15.249	16.125
1423	3	15.165	15.995
1423.1	3	15.145	15.865
1423.2	3	15.124	15.8
1423.3	3	15.124	15.8
1423.4	3	15.124	15.8
1423.5	3	15.103	15.8
1423.6	3	15.145	15.8
1423.7	3	15.145	15.8
1423.8	3	15.228	15.8
1423.9	3	15.333	15.8
1424	3	15.563	15.8
1424.1	3	15.689	15.8
1424.2	3	15.689	15.895
1424.3	3	15.794	16.085
1424.4	3	16.045	16.275
1424.5	3	16.192	16.465
1424.6	3	16.192	16.655
1424.7	3	16.339	16.845
1424.8	3	16.485	17.035
1424.9	3	16.778	17.225
1425	3	16.778	17.415
1425.1	3	16.925	17.605
1425.2	3	17.072	17.805
1425.3	3	17.218	18.015
1425.4	3	17.532	18.225
1425.5	3	17.532	18.435
1425.6	3	17.7	18.645
1425.7	3	17.889	18.855
1425.8	3	18.056	19.065
1425.9	3	18.245	19.275
1426	3	18.454	19.485
1426.1	3	18.705	19.695
1426.2	3	18.957	19.89
1426.3	3	19.208	20.07

1426.4	3	19.481	20.25
1426.5	3	19.753	20.43
1426.6	3	20.025	20.61
1426.7	3	20.318	20.79
1426.8	3	20.591	20.97
1426.9	3	20.863	21.15
1427	3	21.093	21.33
1427.1	3	21.282	21.51
1427.2	3	21.491	21.68
1427.3	3	21.701	21.84
1427.4	3	21.91	22
1427.5	3	22.141	22.16
1427.6	3	22.371	22.32
1427.7	3	22.602	22.48
1427.8	3	22.79	22.64
1427.9	3	22.979	22.8
1428	3	23.146	22.96
1428.1	3	23.314	23.12
1428.2	3	23.481	23.25
1428.3	3	23.649	23.35
1428.4	3	23.837	23.45
1428.5	3	24.005	23.55
1428.6	3	24.173	23.65
1428.7	3	24.319	23.75
1428.8	3	24.445	23.85
1428.9	3	24.55	23.95
1429	3	24.633	24.05
1429.1	3	24.696	24.15
1429.2	3	24.738	24.22
1429.3	3	24.759	24.26
1429.4	3	24.759	24.3
1429.5	3	24.759	24.34
1429.6	3	24.759	24.38
1429.7	3	24.801	24.42
1429.8	3	24.822	24.46
1429.9	3	24.864	24.5
1430	3	24.885	24.54
1430.1	3	24.927	24.58
1430.2	3	24.948	24.615
1430.3	3	24.948	24.645
1430.4	3	24.948	24.675
1430.5	3	24.927	24.705
1430.6	3	24.906	24.735
1430.7	3	24.906	24.765
1430.8	3	24.927	24.795

1430.9	3	24.969	24.825
1431	3	25.01	24.855
1431.1	3	25.031	24.885
1431.2	3	25.031	24.905
1431.3	3	25.073	24.915
1431.4	3	25.073	24.925
1431.5	3	25.073	24.935
1431.6	3	25.052	24.945
1431.7	3	25.052	24.955
1431.8	3	25.031	24.965
1431.9	3	25.01	24.975
1432	3	25.01	24.985
1432.1	3	25.01	24.995
1432.2	3	24.969	24.98
1432.3	3	24.885	24.94
1432.4	3	24.822	24.9
1432.5	3	24.759	24.86
1432.6	3	24.759	24.82
1432.7	3	24.654	24.78
1432.8	3	24.612	24.74
1432.9	3	24.592	24.7
1433	3	24.592	24.66
1433.1	3	24.592	24.62
1433.2	3	24.592	24.595
1433.3	3	24.592	24.585
1433.4	3	24.592	24.575
1433.5	3	24.592	24.565
1433.6	3	24.612	24.555
1433.7	3	24.654	24.545
1433.8	3	24.654	24.535
1433.9	3	24.654	24.525
1434	3	24.675	24.515
1434.1	3	24.675	24.505
1434.2	3	24.675	24.51
1434.3	3	24.675	24.53
1434.4	3	24.675	24.55
1434.5	3	24.675	24.57
1434.6	3	24.675	24.59
1434.7	3	24.696	24.61
1434.8	3	24.696	24.63
1434.9	3	24.696	24.65
1435	3	24.696	24.67
1435.1	3	24.696	24.69
1435.2	3	24.696	24.705
1435.3	3	24.696	24.715

1435.4	3	24.696	24.725
1435.5	3	24.717	24.735
1435.6	3	24.738	24.745
1435.7	3	24.759	24.755
1435.8	3	24.801	24.765
1435.9	3	24.843	24.775
1436	3	24.885	24.785
1436.1	3	24.948	24.795
1436.2	3	24.99	24.795
1436.3	3	25.031	24.785
1436.4	3	25.052	24.775
1436.5	3	25.073	24.765
1436.6	3	25.073	24.755
1436.7	3	25.073	24.745
1436.8	3	25.052	24.735
1436.9	3	25.031	24.725
1437	3	25.01	24.715
1437.1	3	24.969	24.705
1437.2	3	24.927	24.695
1437.3	3	24.906	24.685
1437.4	3	24.885	24.675
1437.5	3	24.864	24.665
1437.6	3	24.843	24.655
1437.7	3	24.822	24.645
1437.8	3	24.801	24.635
1437.9	3	24.78	24.625
1438	3	24.78	24.615
1438.1	3	24.78	24.605
1438.2	3	24.801	24.6
1438.3	3	24.822	24.6
1438.4	3	24.843	24.6
1438.5	3	24.864	24.6
1438.6	3	24.885	24.6
1438.7	3	24.906	24.6
1438.8	3	24.927	24.6
1438.9	3	24.969	24.6
1439	3	25.01	24.6
1439.1	3	25.031	24.6
1439.2	3	25.073	24.625
1439.3	3	25.115	24.675
1439.4	3	25.178	24.725
1439.5	3	25.22	24.775
1439.6	3	25.283	24.825
1439.7	3	25.325	24.875
1439.8	3	25.388	24.925

1439.9	3	25.429	24.975
1440	3	25.492	25.025
1440.1	3	25.534	25.075
1440.2	3	25.597	25.125
1440.3	3	25.639	25.175
1440.4	3	25.702	25.225
1440.5	3	25.744	25.275
1440.6	3	25.806	25.325
1440.7	3	25.848	25.375
1440.8	3	25.911	25.425
1440.9	3	25.911	25.475
1441	3	26.016	25.525
1441.1	3	26.079	25.575
1441.2	3	26.121	25.605
1441.3	3	26.163	25.615
1441.4	3	26.163	25.625
1441.5	3	26.184	25.635
1441.6	3	26.163	25.645
1441.7	3	26.121	25.655
1441.8	3	26.121	25.665
1441.9	3	26.1	25.675
1442	3	25.995	25.685
1442.1	3	25.953	25.695
1442.2	3	25.89	25.685
1442.3	3	25.89	25.655
1442.4	3	25.827	25.625
1442.5	3	25.723	25.595
1442.6	3	25.639	25.565
1442.7	3	25.639	25.535
1442.8	3	25.555	25.505
1442.9	3	25.429	25.475
1443	3	25.367	25.445
1443.1	3	25.367	25.415
1443.2	3	25.325	25.375
1443.3	3	25.262	25.325
1443.4	3	25.178	25.275
1443.5	3	25.178	25.225
1443.6	3	25.115	25.175
1443.7	3	25.052	25.125
1443.8	3	25.01	25.075
1443.9	3	24.906	25.025
1444	3	24.906	24.975
1444.1	3	24.864	24.925
1444.2	3	24.822	24.905
1444.3	3	24.78	24.915

1444.4	3	24.717	24.925
1444.5	3	24.717	24.935
1444.6	3	24.717	24.945
1444.7	3	24.696	24.955
1444.8	3	24.717	24.965
1444.9	3	24.738	24.975
1445	3	24.801	24.985
1445.1	3	24.864	24.995
1445.2	3	24.948	25.02
1445.3	3	25.052	25.06
1445.4	3	25.157	25.1
1445.5	3	25.262	25.14
1445.6	3	25.262	25.18
1445.7	3	25.513	25.22
1445.8	3	25.66	25.26
1445.9	3	25.806	25.3
1446	3	25.932	25.34
1446.1	3	26.037	25.38
1446.2	3	26.163	25.43
1446.3	3	26.246	25.49
1446.4	3	26.309	25.55
1446.5	3	26.351	25.61
1446.6	3	26.351	25.67
1446.7	3	26.351	25.73
1446.8	3	26.309	25.79
1446.9	3	26.288	25.85
1447	3	26.246	25.91
1447.1	3	26.204	25.97
1447.2	3	26.142	26
1447.3	3	26.1	26
1447.4	3	26.058	26
1447.5	3	26.016	26
1447.6	3	25.974	26
1447.7	3	25.932	26
1447.8	3	25.89	26
1447.9	3	25.848	26
1448	3	25.827	26
1448.1	3	25.806	26
1448.2	3	25.806	25.985
1448.3	3	25.786	25.955
1448.4	3	25.786	25.925
1448.5	3	25.786	25.895
1448.6	3	25.786	25.865
1448.7	3	25.786	25.835
1448.8	3	25.827	25.805

1448.9	3	25.848	25.775
1449	3	25.911	25.745
1449.1	3	25.974	25.715
1449.2	3	26.058	25.72
1449.3	3	26.121	25.76
1449.4	3	26.204	25.8
1449.5	3	26.288	25.84
1449.6	3	26.351	25.88
1449.7	3	26.414	25.92
1449.8	3	26.477	25.96
1449.9	3	26.519	26
1450	3	26.581	26.04
1450.1	3	26.644	26.08
1450.2	3	26.686	26.13
1450.3	3	26.749	26.19
1450.4	3	26.791	26.25
1450.5	3	26.854	26.31
1450.6	3	26.896	26.37
1450.7	3	26.896	26.43
1450.8	3	27.042	26.49
1450.9	3	27.084	26.55
1451	3	27.168	26.61
1451.1	3	27.168	26.67
1451.2	3	27.231	26.74
1451.3	3	27.357	26.82
1451.4	3	27.44	26.9
1451.5	3	27.503	26.98
1451.6	3	27.503	27.06
1451.7	3	27.65	27.14
1451.8	3	27.713	27.22
1451.9	3	27.775	27.3
1452	3	27.775	27.38
1452.1	3	27.838	27.46
1452.2	3	27.985	27.555
1452.3	3	28.048	27.665
1452.4	3	28.048	27.775
1452.5	3	28.132	27.885
1452.6	3	28.194	27.995
1452.7	3	28.383	28.105
1452.8	3	28.488	28.215
1452.9	3	28.488	28.325
1453	3	28.592	28.435
1453.1	3	28.697	28.545
1453.2	3	28.907	28.635
1453.3	3	28.99	28.705



1453.4	3	28.99	28.775
1453.5	3	29.074	28.845
1453.6	3	29.158	28.915
1453.7	3	29.263	28.985
1453.8	3	29.263	29.055
1453.9	3	29.305	29.125
1454	3	29.346	29.195
1454.1	3	29.388	29.265
1454.2	3	29.472	29.325
1454.3	3	29.472	29.375
1454.4	3	29.514	29.425
1454.5	3	29.535	29.475
1454.6	3	29.577	29.525
1454.7	3	29.619	29.575
1454.8	3	29.661	29.625
1454.9	3	29.703	29.675
1455	3	29.744	29.725
1455.1	3	29.765	29.775
1455.2	3	29.807	29.815
1455.3	3	29.828	29.845
1455.4	3	29.849	29.875
1455.5	3	29.87	29.905
1455.6	3	29.912	29.935
1455.7	3	29.954	29.965
1455.8	3	29.996	29.995
1455.9	3	30.038	30.025
1456	3	30.08	30.055
1456.1	3	30.122	30.085
1456.2	3	30.163	30.115
1456.3	3	30.205	30.145
1456.4	3	30.247	30.175
1456.5	3	30.268	30.205
1456.6	3	30.31	30.235
1456.7	3	30.331	30.265
1456.8	3	30.331	30.295
1456.9	3	30.331	30.325
1457	3	30.331	30.355
1457.1	3	30.31	30.385
1457.2	3	30.31	30.415
1457.3	3	30.289	30.445
1457.4	3	30.289	30.475
1457.5	3	30.289	30.505
1457.6	3	30.289	30.535
1457.7	3	30.289	30.565
1457.8	3	30.289	30.595

1457.9	3	30.289	30.625
1458	3	30.268	30.655
1458.1	3	30.268	30.685
1458.2	3	30.268	30.7
1458.3	3	30.268	30.7
1458.4	3	30.289	30.7
1458.5	3	30.331	30.7
1458.6	3	30.331	30.7
1458.7	3	30.415	30.7
1458.8	3	30.478	30.7
1458.9	3	30.519	30.7
1459	3	30.582	30.7
1459.1	3	30.603	30.7
1459.2	3	30.645	30.69
1459.3	3	30.645	30.67
1459.4	3	30.645	30.65
1459.5	3	30.645	30.63
1459.6	3	30.645	30.61
1459.7	3	30.645	30.59
1459.8	3	30.645	30.57
1459.9	3	30.624	30.55
1460	3	30.624	30.53
1460.1	3	30.603	30.51
1460.2	3	30.582	30.495
1460.3	3	30.561	30.485
1460.4	3	30.561	30.475
1460.5	3	30.519	30.465
1460.6	3	30.478	30.455
1460.7	3	30.457	30.445
1460.8	3	30.457	30.435
1460.9	3	30.415	30.425
1461	3	30.352	30.415
1461.1	3	30.331	30.405
1461.2	3	30.289	30.395
1461.3	3	30.289	30.385
1461.4	3	30.268	30.375
1461.5	3	30.226	30.365
1461.6	3	30.226	30.355
1461.7	3	30.226	30.345
1461.8	3	30.226	30.335
1461.9	3	30.268	30.325
1462	3	30.352	30.315
1462.1	3	30.394	30.305
1462.2	3	30.394	30.305
1462.3	3	30.436	30.315

1462.4	3	30.499	30.325
1462.5	3	30.582	30.335
1462.6	3	30.582	30.345
1462.7	3	30.645	30.355
1462.8	3	30.687	30.365
1462.9	3	30.729	30.375
1463	3	30.792	30.385
1463.1	3	30.834	30.395
1463.2	3	30.876	30.42
1463.3	3	30.917	30.46
1463.4	3	30.959	30.5
1463.5	3	30.959	30.54
1463.6	3	30.959	30.58
1463.7	3	30.959	30.62
1463.8	3	30.917	30.66
1463.9	3	30.855	30.7
1464	3	30.792	30.74
1464.1	3	30.729	30.78
1464.2	3	30.666	30.78
1464.3	3	30.603	30.74
1464.4	3	30.54	30.7
1464.5	3	30.478	30.66
1464.6	3	30.394	30.62
1464.7	3	30.331	30.58
1464.8	3	30.268	30.54
1464.9	3	30.205	30.5
1465	3	30.142	30.46
1465.1	3	30.08	30.42
1465.2	3	30.038	30.375
1465.3	3	29.975	30.325
1465.4	3	29.933	30.275
1465.5	3	29.87	30.225
1465.6	3	29.828	30.175
1465.7	3	29.765	30.125
1465.8	3	29.724	30.075
1465.9	3	29.682	30.025
1466	3	29.64	29.975
1466.1	3	29.598	29.925
1466.2	3	29.556	29.88
1466.3	3	29.535	29.84
1466.4	3	29.493	29.8
1466.5	3	29.493	29.76
1466.6	3	29.514	29.72
1466.7	3	29.535	29.68
1466.8	3	29.577	29.64

1466.9	3	29.619	29.6
1467	3	29.64	29.56
1467.1	3	29.682	29.52
1467.2	3	29.724	29.515
1467.3	3	29.765	29.545
1467.4	3	29.807	29.575
1467.5	3	29.849	29.605
1467.6	3	29.87	29.635
1467.7	3	29.912	29.665
1467.8	3	29.954	29.695
1467.9	3	29.996	29.725
1468	3	30.017	29.755
1468.1	3	30.059	29.785
1468.2	3	30.08	29.825
1468.3	3	30.122	29.875
1468.4	3	30.163	29.925
1468.5	3	30.205	29.975
1468.6	3	30.226	30.025
1468.7	3	30.268	30.075
1468.8	3	30.331	30.125
1468.9	3	30.373	30.175
1469	3	30.415	30.225
1469.1	3	30.457	30.275
1469.2	3	30.457	30.32
1469.3	3	30.561	30.36
1469.4	3	30.603	30.4
1469.5	3	30.666	30.44
1469.6	3	30.666	30.48
1469.7	3	30.771	30.52
1469.8	3	30.813	30.56
1469.9	3	30.876	30.6
1470	3	30.917	30.64
1470.1	3	30.917	30.68
1470.2	3	31.001	30.71
1470.3	3	31.043	30.73
1470.4	3	31.085	30.75
1470.5	3	31.085	30.77
1470.6	3	31.127	30.79
1470.7	3	31.211	30.81
1470.8	3	31.253	30.83
1470.9	3	31.295	30.85
1471	3	31.295	30.87
1471.1	3	31.336	30.89
1471.2	3	31.42	30.905
1471.3	3	31.441	30.915

1471.4	3	31.441	30.925
1471.5	3	31.483	30.935
1471.6	3	31.546	30.945
1471.7	3	31.546	30.955
1471.8	3	31.546	30.965
1471.9	3	31.546	30.975
1472	3	31.525	30.985
1472.1	3	31.42	30.995
1472.2	3	31.42	30.995
1472.3	3	31.357	30.985
1472.4	3	31.295	30.975
1472.5	3	31.253	30.965
1472.6	3	31.127	30.955
1472.7	3	31.127	30.945
1472.8	3	31.043	30.935
1472.9	3	30.98	30.925
1473	3	30.897	30.915
1473.1	3	30.813	30.905
1473.2	3	30.75	30.875
1473.3	3	30.687	30.825
1473.4	3	30.645	30.775
1473.5	3	30.582	30.725
1473.6	3	30.519	30.675
1473.7	3	30.457	30.625
1473.8	3	30.394	30.575
1473.9	3	30.352	30.525
1474	3	30.289	30.475
1474.1	3	30.226	30.425
1474.2	3	30.205	30.37
1474.3	3	30.163	30.31
1474.4	3	30.142	30.25
1474.5	3	30.122	30.19
1474.6	3	30.08	30.13
1474.7	3	30.08	30.07
1474.8	3	30.059	30.01
1474.9	3	30.059	29.95
1475	3	30.08	29.89
1475.1	3	30.122	29.83
1475.2	3	30.163	29.805
1475.3	3	30.205	29.815
1475.4	3	30.268	29.825
1475.5	3	30.31	29.835
1475.6	3	30.373	29.845
1475.7	3	30.436	29.855
1475.8	3	30.478	29.865

1475.9	3	30.519	29.875
1476	3	30.561	29.885
1476.1	3	30.603	29.895
1476.2	3	30.624	29.915
1476.3	3	30.624	29.945
1476.4	3	30.624	29.975
1476.5	3	30.603	30.005
1476.6	3	30.603	30.035
1476.7	3	30.582	30.065
1476.8	3	30.582	30.095
1476.9	3	30.582	30.125
1477	3	30.561	30.155
1477.1	3	30.561	30.185
1477.2	3	30.561	30.225
1477.3	3	30.54	30.275
1477.4	3	30.54	30.325
1477.5	3	30.54	30.375
1477.6	3	30.54	30.425
1477.7	3	30.54	30.475
1477.8	3	30.561	30.525
1477.9	3	30.582	30.575
1478	3	30.603	30.625
1478.1	3	30.645	30.675
1478.2	3	30.687	30.725
1478.3	3	30.75	30.775
1478.4	3	30.75	30.825
1478.5	3	30.876	30.875
1478.6	3	30.959	30.925
1478.7	3	31.064	30.975
1478.8	3	31.148	31.025
1478.9	3	31.232	31.075
1479	3	31.315	31.125
1479.1	3	31.42	31.175
1479.2	3	31.504	31.23
1479.3	3	31.504	31.29
1479.4	3	31.734	31.35
1479.5	3	31.839	31.41
1479.6	3	31.965	31.47
1479.7	3	31.965	31.53
1479.8	3	32.07	31.59
1479.9	3	32.279	31.65
1480	3	32.363	31.71
1480.1	3	32.363	31.77
1480.2	3	32.447	31.82
1480.3	3	32.551	31.86

1480.4	3	32.572	31.9
1480.5	3	32.572	31.94
1480.6	3	32.572	31.98
1480.7	3	32.572	32.02
1480.8	3	32.572	32.06
1480.9	3	32.572	32.1
1481	3	32.572	32.14
1481.1	3	32.53	32.18
1481.2	3	32.488	32.21
1481.3	3	32.405	32.23
1481.4	3	32.405	32.25
1481.5	3	32.363	32.27
1481.6	3	32.363	32.29
1481.7	3	32.363	32.31
1481.8	3	32.363	32.33
1481.9	3	32.363	32.35
1482	3	32.384	32.37
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1482.2	3	32.321	32.39
1482.3	3	32.321	32.37
1482.4	3	32.279	32.35
1482.5	3	32.216	32.33
1482.6	3	32.174	32.31
1482.7	3	32.111	32.29
1482.8	3	32.049	32.27
1482.9	3	31.986	32.25
1483	3	31.923	32.23
1483.1	3	31.86	32.21
1483.2	3	31.797	32.175
1483.3	3	31.734	32.125
1483.4	3	31.672	32.075
1483.5	3	31.588	32.025
1483.6	3	31.525	31.975
1483.7	3	31.462	31.925
1483.8	3	31.378	31.875
1483.9	3	31.295	31.825
1484	3	31.211	31.775
1484.1	3	31.064	31.725
1484.2	3	30.834	31.545
1484.3	3	30.561	31.235
1484.4	3	30.268	30.925
1484.5	3	29.975	30.615
1484.6	3	29.975	30.305
1484.7	3	29.367	29.995
1484.8	3	29.053	29.685

1484.9	3	28.739	29.375
1485	3	28.425	29.065
1485.1	3	28.111	28.755
1485.2	3	27.817	28.435
1485.3	3	27.482	28.105
1485.4	3	27.168	27.775
1485.5	3	26.875	27.445
1485.6	3	26.561	27.115
1485.7	3	26.225	26.785
1485.8	3	25.869	26.455
1485.9	3	25.471	26.125
1486	3	25.031	25.795
1486.1	3	24.592	25.465
1486.2	3	24.152	25.135
1486.3	3	23.691	24.805
1486.4	3	23.23	24.475
1486.5	3	22.811	24.145
1486.6	3	22.371	23.815
1486.7	3	21.931	23.485
1486.8	3	21.491	23.155
1486.9	3	21.072	22.825
1487	3	20.612	22.495
1487.1	3	20.172	22.165
1487.2	3	19.753	21.835
1487.3	3	19.376	21.505
1487.4	3	19.041	21.175
1487.5	3	18.81	20.845
1487.6	3	18.685	20.515
1487.7	3	18.58	20.185
1487.8	3	18.496	19.855
1487.9	3	18.496	19.525
1488	3	18.328	19.195
1488.1	3	18.245	18.865
1488.2	3	18.14	18.535
1488.3	3	18.014	18.205
1488.4	3	18.014	17.875
1488.5	3	17.658	17.545
1488.6	3	17.47	17.215
1488.7	3	17.26	16.885
1488.8	3	17.26	16.555
1488.9	3	17.03	16.225
1489	3	16.548	15.895
1489.1	3	16.318	15.565
1489.2	3	16.066	15.235
1489.3	3	16.066	14.905



1489.4	3	15.563	14.575
1489.5	3	15.249	14.245
1489.6	3	14.893	13.915
1489.7	3	14.893	13.585
1489.8	3	14.495	13.255
1489.9	3	13.553	12.925
1490	3	13.113	12.595
1490.1	3	13.113	12.265
1490.2	3	12.631	11.935
1490.3	3	12.107	11.605
1490.4	3	11.081	11.275
1490.5	3	11.081	10.945
1490.6	3	10.557	10.615
1490.7	3	10.054	10.285
1490.8	3	9.238	9.955
1490.9	3	8.902	9.625
1491	3	8.902	9.295
1491.1	3	8.609	8.965
1491.2	3	8.358	8.635
1491.3	3	7.939	8.305
1491.4	3	7.939	7.975
1491.5	3	7.729	7.645
1491.6	3	7.52	7.315
1491.7	3	7.31	6.985
1491.8	3	6.871	6.655
1491.9	3	6.871	6.325
1492	3	6.619	5.995
1492.1	3	6.368	5.665
1492.2	3	6.033	5.335
1492.3	3	5.614	5.005
1492.4	3	5.153	4.675
1492.5	3	4.671	4.345
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1492.7	3	3.708	3.685
1492.8	3	3.205	3.355
1492.9	3	2.702	3.025
1493	3	2.199	2.695
1493.1	3	1.697	2.365
1493.2	3	1.194	2.09
1493.3	3	0.691	1.87
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1493.5	3	0.251	1.43
1493.6	3	0.23	1.21
1493.7	3	0.147	0.99
1493.8	3	0.105	0.77

1493.9	3	0.126	0.55
1494	3	0.105	0.33
1494.1	3	0.063	0.11
1494.2	3	0.084	0
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1500.2	3	-0.021	0
1500.3	3	0	0
1500.4	3	0	0
1500.5	3	0	0
1500.6	3	0	0
1500.7	3	-0.021	0
1500.8	3	0	0
1500.9	3	0	0
1501	3	0	0
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1501.2	3	0	0
1501.3	3	0	0
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1556.7	3	17.197	17.695
1556.8	3	17.176	17.785

1556.9	3	17.176	17.875
1557	3	17.197	17.965
1557.1	3	17.239	18.055
1557.2	3	17.365	18.125
1557.3	3	17.428	18.175
1557.4	3	17.428	18.225
1557.5	3	17.512	18.275
1557.6	3	17.574	18.325
1557.7	3	17.763	18.375
1557.8	3	17.763	18.425
1557.9	3	17.847	18.475
1558	3	17.951	18.525
1558.1	3	18.056	18.575
1558.2	3	18.161	18.67
1558.3	3	18.287	18.81
1558.4	3	18.412	18.95
1558.5	3	18.58	19.09
1558.6	3	18.726	19.23
1558.7	3	18.894	19.37
1558.8	3	19.062	19.51
1558.9	3	19.25	19.65
1559	3	19.439	19.79
1559.1	3	19.627	19.93
1559.2	3	19.837	20.11
1559.3	3	20.046	20.33
1559.4	3	20.256	20.55
1559.5	3	20.486	20.77
1559.6	3	20.695	20.99
1559.7	3	20.926	21.21
1559.8	3	21.156	21.43
1559.9	3	21.387	21.65
1560	3	21.617	21.87
1560.1	3	21.868	22.09
1560.2	3	22.141	22.315
1560.3	3	22.413	22.545
1560.4	3	22.685	22.775
1560.5	3	23	23.005
1560.6	3	23.293	23.235
1560.7	3	23.607	23.465
1560.8	3	23.921	23.695
1560.9	3	24.235	23.925
1561	3	24.571	24.155
1561.1	3	24.906	24.385
1561.2	3	25.241	24.64
1561.3	3	25.576	24.92



1561.4	3	25.911	25.2
1561.5	3	26.246	25.48
1561.6	3	26.602	25.76
1561.7	3	26.938	26.04
1561.8	3	27.273	26.32
1561.9	3	27.608	26.6
1562	3	27.943	26.88
1562.1	3	28.278	27.16
1562.2	3	28.634	27.46
1562.3	3	28.948	27.78
1562.4	3	29.284	28.1
1562.5	3	29.284	28.42
1562.6	3	29.912	28.74
1562.7	3	30.205	29.06
1562.8	3	30.499	29.38
1562.9	3	30.75	29.7
1563	3	31.001	30.02
1563.1	3	31.232	30.34
1563.2	3	31.441	30.65
1563.3	3	31.651	30.95
1563.4	3	31.839	31.25
1563.5	3	31.839	31.55
1563.6	3	32.237	31.85
1563.7	3	32.447	32.15
1563.8	3	32.656	32.45
1563.9	3	32.866	32.75
1564	3	32.866	33.05
1564.1	3	33.264	33.35
1564.2	3	33.473	33.635
1564.3	3	33.682	33.905
1564.4	3	33.682	34.175
1564.5	3	34.122	34.445
1564.6	3	34.332	34.715
1564.7	3	34.562	34.985
1564.8	3	34.562	35.255
1564.9	3	34.772	35.525
1565	3	35.233	35.795
1565.1	3	35.442	36.065
1565.2	3	35.672	36.255
1565.3	3	35.672	36.365
1565.4	3	35.903	36.475
1565.5	3	36.343	36.585
1565.6	3	36.573	36.695
1565.7	3	36.573	36.805
1565.8	3	36.783	36.915

1565.9	3	36.971	37.025
1566	3	37.327	37.135
1566.1	3	37.327	37.245
1566.2	3	37.495	37.4
1566.3	3	37.662	37.6
1566.4	3	38.018	37.8
1566.5	3	38.186	38
1566.6	3	38.186	38.2
1566.7	3	38.375	38.4
1566.8	3	38.542	38.6
1566.9	3	38.856	38.8
1567	3	38.856	39
1567.1	3	39.003	39.2
1567.2	3	39.129	39.36
1567.3	3	39.254	39.48
1567.4	3	39.359	39.6
1567.5	3	39.485	39.72
1567.6	3	39.589	39.84
1567.7	3	39.715	39.96
1567.8	3	39.82	40.08
1567.9	3	39.946	40.2
1568	3	40.05	40.32
1568.1	3	40.176	40.44
1568.2	3	40.302	40.58
1568.3	3	40.427	40.74
1568.4	3	40.532	40.9
1568.5	3	40.658	41.06
1568.6	3	40.762	41.22
1568.7	3	40.888	41.38
1568.8	3	40.993	41.54
1568.9	3	41.119	41.7
1569	3	41.223	41.86
1569.1	3	41.349	42.02
1569.2	3	41.475	42.17
1569.3	3	41.6	42.31
1569.4	3	41.726	42.45
1569.5	3	41.852	42.59
1569.6	3	41.998	42.73
1569.7	3	42.145	42.87
1569.8	3	42.271	43.01
1569.9	3	42.438	43.15
1570	3	42.585	43.29
1570.1	3	42.752	43.43
1570.2	3	42.899	43.58
1570.3	3	43.046	43.74

1570.4	3	43.192	43.9
1570.5	3	43.36	44.06
1570.6	3	43.507	44.22
1570.7	3	43.653	44.38
1570.8	3	43.821	44.54
1570.9	3	43.967	44.7
1571	3	44.135	44.86
1571.1	3	44.302	45.02
1571.2	3	44.47	45.145
1571.3	3	44.638	45.235
1571.4	3	44.826	45.325
1571.5	3	44.994	45.415
1571.6	3	45.182	45.505
1571.7	3	45.35	45.595
1571.8	3	45.517	45.685
1571.9	3	45.664	45.775
1572	3	45.79	45.865
1572.1	3	45.894	45.955
1572.2	3	46.02	46.04
1572.3	3	46.125	46.12
1572.4	3	46.23	46.2
1572.5	3	46.313	46.28
1572.6	3	46.439	46.36
1572.7	3	46.439	46.44
1572.8	3	46.669	46.52
1572.9	3	46.774	46.6
1573	3	46.9	46.68
1573.1	3	47.026	46.76
1573.2	3	47.026	46.835
1573.3	3	47.235	46.905
1573.4	3	47.319	46.975
1573.5	3	47.403	47.045
1573.6	3	47.403	47.115
1573.7	3	47.57	47.185
1573.8	3	47.654	47.255
1573.9	3	47.717	47.325
1574	3	47.717	47.395
1574.1	3	47.801	47.465
1574.2	3	47.947	47.5
1574.3	3	48.01	47.5
1574.4	3	48.073	47.5
1574.5	3	48.073	47.5
1574.6	3	48.136	47.5
1574.7	3	48.24	47.5
1574.8	3	48.282	47.5

1574.9	3	48.282	47.5
1575	3	48.324	47.5
1575.1	3	48.345	47.5
1575.2	3	48.366	47.49
1575.3	3	48.387	47.47
1575.4	3	48.387	47.45
1575.5	3	48.387	47.43
1575.6	3	48.366	47.41
1575.7	3	48.345	47.39
1575.8	3	48.345	47.37
1575.9	3	48.324	47.35
1576	3	48.303	47.33
1576.1	3	48.261	47.31
1576.2	3	48.261	47.295
1576.3	3	48.24	47.285
1576.4	3	48.24	47.275
1576.5	3	48.24	47.265
1576.6	3	48.261	47.255
1576.7	3	48.261	47.245
1576.8	3	48.282	47.235
1576.9	3	48.282	47.225
1577	3	48.303	47.215
1577.1	3	48.303	47.205
1577.2	3	48.324	47.19
1577.3	3	48.324	47.17
1577.4	3	48.345	47.15
1577.5	3	48.366	47.13
1577.6	3	48.366	47.11
1577.7	3	48.366	47.09
1577.8	3	48.366	47.07
1577.9	3	48.324	47.05
1578	3	48.303	47.03
1578.1	3	48.261	47.01
1578.2	3	48.199	47
1578.3	3	48.136	47
1578.4	3	48.073	47
1578.5	3	48.01	47
1578.6	3	47.926	47
1578.7	3	47.863	47
1578.8	3	47.822	47
1578.9	3	47.78	47
1579	3	47.759	47
1579.1	3	47.738	47
1579.2	3	47.717	47
1579.3	3	47.717	47

1579.4	3	47.696	47
1579.5	3	47.696	47
1579.6	3	47.696	47
1579.7	3	47.696	47
1579.8	3	47.717	47
1579.9	3	47.717	47
1580	3	47.717	47
1580.1	3	47.696	47
1580.2	3	47.675	47
1580.3	3	47.633	47
1580.4	3	47.612	47
1580.5	3	47.591	47
1580.6	3	47.591	47
1580.7	3	47.591	47
1580.8	3	47.591	47
1580.9	3	47.591	47
1581	3	47.591	47
1581.1	3	47.57	47
1581.2	3	47.549	47
1581.3	3	47.507	47
1581.4	3	47.465	47
1581.5	3	47.424	47
1581.6	3	47.382	47
1581.7	3	47.361	47
1581.8	3	47.319	47
1581.9	3	47.298	47
1582	3	47.256	47
1582.1	3	47.235	47
1582.2	3	47.214	47.01
1582.3	3	47.172	47.03
1582.4	3	47.151	47.05
1582.5	3	47.13	47.07
1582.6	3	47.13	47.09
1582.7	3	47.109	47.11
1582.8	3	47.109	47.13
1582.9	3	47.088	47.15
1583	3	47.109	47.17
1583.1	3	47.109	47.19
1583.2	3	47.13	47.21
1583.3	3	47.13	47.23
1583.4	3	47.151	47.25
1583.5	3	47.151	47.27
1583.6	3	47.172	47.29
1583.7	3	47.172	47.31
1583.8	3	47.172	47.33

1583.9	3	47.214	47.35
1584	3	47.235	47.37
1584.1	3	47.235	47.39
1584.2	3	47.256	47.425
1584.3	3	47.298	47.475
1584.4	3	47.361	47.525
1584.5	3	47.403	47.575
1584.6	3	47.403	47.625
1584.7	3	47.424	47.675
1584.8	3	47.507	47.725
1584.9	3	47.528	47.775
1585	3	47.528	47.825
1585.1	3	47.57	47.875
1585.2	3	47.612	47.93
1585.3	3	47.717	47.99
1585.4	3	47.717	48.05
1585.5	3	47.759	48.11
1585.6	3	47.822	48.17
1585.7	3	47.863	48.23
1585.8	3	47.968	48.29
1585.9	3	47.968	48.35
1586	3	48.031	48.41
1586.1	3	48.073	48.47
1586.2	3	48.115	48.53
1586.3	3	48.178	48.59
1586.4	3	48.22	48.65
1586.5	3	48.282	48.71
1586.6	3	48.324	48.77
1586.7	3	48.387	48.83
1586.8	3	48.45	48.89
1586.9	3	48.492	48.95
1587	3	48.555	49.01
1587.1	3	48.597	49.07
1587.2	3	48.659	49.12
1587.3	3	48.722	49.16
1587.4	3	48.764	49.2
1587.5	3	48.827	49.24
1587.6	3	48.869	49.28
1587.7	3	48.932	49.32
1587.8	3	48.995	49.36
1587.9	3	49.036	49.4
1588	3	49.099	49.44
1588.1	3	49.162	49.48
1588.2	3	49.225	49.525
1588.3	3	49.267	49.575

1588.4	3	49.351	49.625
1588.5	3	49.351	49.675
1588.6	3	49.476	49.725
1588.7	3	49.539	49.775
1588.8	3	49.602	49.825
1588.9	3	49.665	49.875
1589	3	49.728	49.925
1589.1	3	49.791	49.975
1589.2	3	49.853	50.03
1589.3	3	49.895	50.09
1589.4	3	49.958	50.15
1589.5	3	50.021	50.21
1589.6	3	50.084	50.27
1589.7	3	50.147	50.33
1589.8	3	50.209	50.39
1589.9	3	50.272	50.45
1590	3	50.335	50.51
1590.1	3	50.398	50.57
1590.2	3	50.461	50.62
1590.3	3	50.524	50.66
1590.4	3	50.587	50.7
1590.5	3	50.649	50.74
1590.6	3	50.691	50.78
1590.7	3	50.754	50.82
1590.8	3	50.817	50.86
1590.9	3	50.88	50.9
1591	3	50.943	50.94
1591.1	3	51.005	50.98
1591.2	3	51.068	51.025
1591.3	3	51.131	51.075
1591.4	3	51.194	51.125
1591.5	3	51.257	51.175
1591.6	3	51.257	51.225
1591.7	3	51.383	51.275
1591.8	3	51.445	51.325
1591.9	3	51.529	51.375
1592	3	51.529	51.425
1592.1	3	51.676	51.475
1592.2	3	51.76	51.535
1592.3	3	51.843	51.605
1592.4	3	51.906	51.675
1592.5	3	51.906	51.745
1592.6	3	52.074	51.815
1592.7	3	52.158	51.885
1592.8	3	52.241	51.955

1592.9	3	52.241	52.025
1593	3	52.325	52.095
1593.1	3	52.514	52.165
1593.2	3	52.618	52.25
1593.3	3	52.723	52.35
1593.4	3	52.723	52.45
1593.5	3	52.828	52.55
1593.6	3	53.016	52.65
1593.7	3	53.121	52.75
1593.8	3	53.121	52.85
1593.9	3	53.247	52.95
1594	3	53.456	53.05
1594.1	3	53.561	53.15
1594.2	3	53.561	53.245
1594.3	3	53.666	53.335
1594.4	3	53.77	53.425
1594.5	3	53.938	53.515
1594.6	3	54.022	53.605
1594.7	3	54.022	53.695
1594.8	3	54.085	53.785
1594.9	3	54.127	53.875
1595	3	54.231	53.965
1595.1	3	54.231	54.055
1595.2	3	54.294	54.125
1595.3	3	54.336	54.175
1595.4	3	54.378	54.225
1595.5	3	54.483	54.275
1595.6	3	54.483	54.325
1595.7	3	54.525	54.375
1595.8	3	54.566	54.425
1595.9	3	54.608	54.475
1596	3	54.65	54.525
1596.1	3	54.713	54.575
1596.2	3	54.755	54.615
1596.3	3	54.797	54.645
1596.4	3	54.839	54.675
1596.5	3	54.881	54.705
1596.6	3	54.902	54.735
1596.7	3	54.943	54.765
1596.8	3	54.985	54.795
1596.9	3	55.027	54.825
1597	3	55.069	54.855
1597.1	3	55.111	54.885
1597.2	3	55.153	54.905
1597.3	3	55.174	54.915



1597.4	3	55.216	54.925
1597.5	3	55.237	54.935
1597.6	3	55.258	54.945
1597.7	3	55.258	54.955
1597.8	3	55.258	54.965
1597.9	3	55.258	54.975
1598	3	55.237	54.985
1598.1	3	55.237	54.995
1598.2	3	55.216	54.995
1598.3	3	55.216	54.985
1598.4	3	55.195	54.975
1598.5	3	55.174	54.965
1598.6	3	55.153	54.955
1598.7	3	55.132	54.945
1598.8	3	55.09	54.935
1598.9	3	55.069	54.925
1599	3	55.048	54.915
1599.1	3	55.027	54.905
1599.2	3	54.985	54.885
1599.3	3	54.964	54.855
1599.4	3	54.943	54.825
1599.5	3	54.923	54.795
1599.6	3	54.902	54.765
1599.7	3	54.881	54.735
1599.8	3	54.86	54.705
1599.9	3	54.839	54.675
1600	3	54.818	54.645
1600.1	3	54.797	54.615
1600.2	3	54.776	54.6
1600.3	3	54.776	54.6
1600.4	3	54.755	54.6
1600.5	3	54.755	54.6
1600.6	3	54.734	54.6
1600.7	3	54.734	54.6
1600.8	3	54.734	54.6
1600.9	3	54.734	54.6
1601	3	54.734	54.6
1601.1	3	54.734	54.6
1601.2	3	54.755	54.61
1601.3	3	54.755	54.63
1601.4	3	54.755	54.65
1601.5	3	54.776	54.67
1601.6	3	54.797	54.69
1601.7	3	54.818	54.71
1601.8	3	54.818	54.73

1601.9	3	54.839	54.75
1602	3	54.86	54.77
1602.1	3	54.902	54.79
1602.2	3	54.902	54.815
1602.3	3	54.943	54.845
1602.4	3	54.964	54.875
1602.5	3	55.006	54.905
1602.6	3	55.006	54.935
1602.7	3	55.048	54.965
1602.8	3	55.111	54.995
1602.9	3	55.153	55.025
1603	3	55.153	55.055
1603.1	3	55.174	55.085
1603.2	3	55.216	55.12
1603.3	3	55.3	55.16
1603.4	3	55.341	55.2
1603.5	3	55.341	55.24
1603.6	3	55.404	55.28
1603.7	3	55.446	55.32
1603.8	3	55.53	55.36
1603.9	3	55.53	55.4
1604	3	55.593	55.44
1604.1	3	55.635	55.48
1604.2	3	55.718	55.51
1604.3	3	55.76	55.53
1604.4	3	55.76	55.55
1604.5	3	55.802	55.57
1604.6	3	55.844	55.59
1604.7	3	55.907	55.61
1604.8	3	55.907	55.63
1604.9	3	55.949	55.65
1605	3	55.97	55.67
1605.1	3	56.012	55.69
1605.2	3	56.033	55.72
1605.3	3	56.075	55.76
1605.4	3	56.096	55.8
1605.5	3	56.137	55.84
1605.6	3	56.2	55.88
1605.7	3	56.2	55.92
1605.8	3	56.221	55.96
1605.9	3	56.242	56
1606	3	56.263	56.04
1606.1	3	56.305	56.08
1606.2	3	56.326	56.11
1606.3	3	56.347	56.13

1606.4	3	56.368	56.15
1606.5	3	56.41	56.17
1606.6	3	56.431	56.19
1606.7	3	56.473	56.21
1606.8	3	56.494	56.23
1606.9	3	56.514	56.25
1607	3	56.556	56.27
1607.1	3	56.577	56.29
1607.2	3	56.598	56.315
1607.3	3	56.64	56.345
1607.4	3	56.661	56.375
1607.5	3	56.682	56.405
1607.6	3	56.703	56.435
1607.7	3	56.703	56.465
1607.8	3	56.724	56.495
1607.9	3	56.724	56.525
1608	3	56.724	56.555
1608.1	3	56.724	56.585
1608.2	3	56.703	56.605
1608.3	3	56.703	56.615
1608.4	3	56.703	56.625
1608.5	3	56.703	56.635
1608.6	3	56.703	56.645
1608.7	3	56.682	56.655
1608.8	3	56.682	56.665
1608.9	3	56.682	56.675
1609	3	56.661	56.685
1609.1	3	56.661	56.695
1609.2	3	56.661	56.7
1609.3	3	56.661	56.7
1609.4	3	56.64	56.7
1609.5	3	56.64	56.7
1609.6	3	56.619	56.7
1609.7	3	56.598	56.7
1609.8	3	56.598	56.7
1609.9	3	56.577	56.7
1610	3	56.577	56.7
1610.1	3	56.577	56.7
1610.2	3	56.535	56.69
1610.3	3	56.535	56.669
1610.4	3	56.535	56.65
1610.5	3	56.535	56.63
1610.6	3	56.514	56.61
1610.7	3	56.494	56.59
1610.8	3	56.494	56.57

1610.9	3	56.494	56.55
1611	3	56.494	56.53
1611.1	3	56.494	56.51
1611.2	3	56.494	56.5
1611.3	3	56.494	56.5
1611.4	3	56.494	56.5
1611.5	3	56.494	56.5
1611.6	3	56.514	56.5
1611.7	3	56.514	56.5
1611.8	3	56.514	56.5
1611.9	3	56.514	56.5
1612	3	56.535	56.5
1612.1	3	56.556	56.5
1612.2	3	56.556	56.5
1612.3	3	56.556	56.5
1612.4	3	56.577	56.5
1612.5	3	56.577	56.5
1612.6	3	56.598	56.5
1612.7	3	56.598	56.5
1612.8	3	56.598	56.5
1612.9	3	56.619	56.5
1613	3	56.64	56.5
1613.1	3	56.661	56.5
1613.2	3	56.661	56.5
1613.3	3	56.682	56.5
1613.4	3	56.703	56.5
1613.5	3	56.703	56.5
1613.6	3	56.724	56.5
1613.7	3	56.724	56.5
1613.8	3	56.724	56.5
1613.9	3	56.724	56.5
1614	3	56.724	56.5
1614.1	3	56.724	56.5
1614.2	3	56.724	56.5
1614.3	3	56.724	56.5
1614.4	3	56.724	56.5
1614.5	3	56.724	56.5
1614.6	3	56.724	56.5
1614.7	3	56.703	56.5
1614.8	3	56.703	56.5
1614.9	3	56.682	56.5
1615	3	56.682	56.5
1615.1	3	56.661	56.5
1615.2	3	56.64	56.5
1615.3	3	56.619	56.5

1615.4	3	56.619	56.5
1615.5	3	56.577	56.5
1615.6	3	56.556	56.5
1615.7	3	56.535	56.5
1615.8	3	56.494	56.5
1615.9	3	56.452	56.5
1616	3	56.41	56.5
1616.1	3	56.368	56.5
1616.2	3	56.326	56.495
1616.3	3	56.305	56.485
1616.4	3	56.263	56.475
1616.5	3	56.221	56.465
1616.6	3	56.179	56.455
1616.7	3	56.137	56.445
1616.8	3	56.116	56.435
1616.9	3	56.075	56.425
1617	3	56.033	56.415
1617.1	3	56.012	56.405
1617.2	3	55.991	56.385
1617.3	3	55.97	56.355
1617.4	3	55.949	56.325
1617.5	3	55.928	56.295
1617.6	3	55.907	56.265
1617.7	3	55.886	56.235
1617.8	3	55.865	56.205
1617.9	3	55.844	56.175
1618	3	55.823	56.145
1618.1	3	55.802	56.115
1618.2	3	55.76	56.085
1618.3	3	55.739	56.055
1618.4	3	55.718	56.025
1618.5	3	55.677	55.995
1618.6	3	55.656	55.965
1618.7	3	55.614	55.935
1618.8	3	55.551	55.905
1618.9	3	55.509	55.875
1619	3	55.467	55.845
1619.1	3	55.404	55.815
1619.2	3	55.362	55.765
1619.3	3	55.32	55.695
1619.4	3	55.258	55.625
1619.5	3	55.216	55.555
1619.6	3	55.174	55.485
1619.7	3	55.111	55.415
1619.8	3	55.069	55.345

1619.9	3	55.027	55.275
1620	3	54.985	55.205
1620.1	3	54.923	55.135
1620.2	3	54.923	55.075
1620.3	3	54.839	55.025
1620.4	3	54.797	54.975
1620.5	3	54.755	54.925
1620.6	3	54.692	54.875
1620.7	3	54.692	54.825
1620.8	3	54.608	54.775
1620.9	3	54.545	54.725
1621	3	54.525	54.675
1621.1	3	54.525	54.625
1621.2	3	54.504	54.58
1621.3	3	54.462	54.54
1621.4	3	54.441	54.5
1621.5	3	54.441	54.46
1621.6	3	54.441	54.42
1621.7	3	54.42	54.38
1621.8	3	54.399	54.34
1621.9	3	54.378	54.3
1622	3	54.378	54.26
1622.1	3	54.378	54.22
1622.2	3	54.357	54.19
1622.3	3	54.336	54.17
1622.4	3	54.336	54.15
1622.5	3	54.336	54.13
1622.6	3	54.315	54.11
1622.7	3	54.294	54.09
1622.8	3	54.273	54.07
1622.9	3	54.273	54.05
1623	3	54.252	54.03
1623.1	3	54.231	54.01
1623.2	3	54.21	53.985
1623.3	3	54.21	53.955
1623.4	3	54.189	53.925
1623.5	3	54.168	53.895
1623.6	3	54.147	53.865
1623.7	3	54.127	53.835
1623.8	3	54.127	53.805
1623.9	3	54.106	53.775
1624	3	54.106	53.745
1624.1	3	54.085	53.715
1624.2	3	54.064	53.695
1624.3	3	54.043	53.685

1624.4	3	54.043	53.675
1624.5	3	54.022	53.665
1624.6	3	54.022	53.655
1624.7	3	54.001	53.645
1624.8	3	54.001	53.635
1624.9	3	54.001	53.625
1625	3	53.98	53.615
1625.1	3	53.98	53.605
1625.2	3	53.98	53.615
1625.3	3	53.98	53.645
1625.4	3	53.98	53.675
1625.5	3	53.98	53.705
1625.6	3	53.98	53.735
1625.7	3	54.001	53.765
1625.8	3	54.001	53.795
1625.9	3	54.022	53.825
1626	3	54.022	53.855
1626.1	3	54.043	53.885
1626.2	3	54.064	53.905
1626.3	3	54.064	53.915
1626.4	3	54.085	53.925
1626.5	3	54.106	53.935
1626.6	3	54.106	53.945
1626.7	3	54.127	53.955
1626.8	3	54.147	53.965
1626.9	3	54.168	53.975
1627	3	54.189	53.985
1627.1	3	54.21	53.995
1627.2	3	54.231	54.005
1627.3	3	54.231	54.015
1627.4	3	54.231	54.025
1627.5	3	54.252	54.035
1627.6	3	54.252	54.045
1627.7	3	54.252	54.055
1627.8	3	54.252	54.065
1627.9	3	54.273	54.075
1628	3	54.273	54.085
1628.1	3	54.273	54.095
1628.2	3	54.273	54.1
1628.3	3	54.273	54.1
1628.4	3	54.252	54.1
1628.5	3	54.252	54.1
1628.6	3	54.252	54.1
1628.7	3	54.252	54.1
1628.8	3	54.252	54.1

1628.9	3	54.252	54.1
1629	3	54.231	54.1
1629.1	3	54.231	54.1
1629.2	3	54.21	54.085
1629.3	3	54.189	54.055
1629.4	3	54.147	54.025
1629.5	3	54.106	53.995
1629.6	3	54.085	53.965
1629.7	3	54.022	53.935
1629.8	3	53.98	53.905
1629.9	3	53.98	53.875
1630	3	53.854	53.845
1630.1	3	53.791	53.815
1630.2	3	53.729	53.78
1630.3	3	53.729	53.74
1630.4	3	53.687	53.7
1630.5	3	53.561	53.66
1630.6	3	53.519	53.62
1630.7	3	53.477	53.58
1630.8	3	53.477	53.54
1630.9	3	53.414	53.5
1631	3	53.31	53.46
1631.1	3	53.268	53.42
1631.2	3	53.268	53.38
1631.3	3	53.226	53.34
1631.4	3	53.142	53.3
1631.5	3	53.121	53.26
1631.6	3	53.079	53.22
1631.7	3	53.079	53.18
1631.8	3	53.058	53.14
1631.9	3	52.995	53.1
1632	3	52.954	53.06
1632.1	3	52.954	53.02
1632.2	3	52.933	52.98
1632.3	3	52.912	52.94
1632.4	3	52.891	52.9
1632.5	3	52.891	52.86
1632.6	3	52.891	52.82
1632.7	3	52.87	52.78
1632.8	3	52.87	52.74
1632.9	3	52.891	52.7
1633	3	52.891	52.66
1633.1	3	52.891	52.62
1633.2	3	52.891	52.575
1633.3	3	52.891	52.525



1633.4	3	52.891	52.475
1633.5	3	52.891	52.425
1633.6	3	52.891	52.375
1633.7	3	52.891	52.325
1633.8	3	52.891	52.275
1633.9	3	52.891	52.225
1634	3	52.891	52.175
1634.1	3	52.891	52.125
1634.2	3	52.891	52.115
1634.3	3	52.891	52.145
1634.4	3	52.87	52.175
1634.5	3	52.849	52.205
1634.6	3	52.849	52.235
1634.7	3	52.807	52.265
1634.8	3	52.786	52.295
1634.9	3	52.744	52.325
1635	3	52.702	52.355
1635.1	3	52.639	52.385
1635.2	3	52.597	52.38
1635.3	3	52.535	52.34
1635.4	3	52.472	52.3
1635.5	3	52.43	52.26
1635.6	3	52.367	52.22
1635.7	3	52.325	52.18
1635.8	3	52.283	52.14
1635.9	3	52.241	52.1
1636	3	52.199	52.06
1636.1	3	52.158	52.02
1636.2	3	52.116	51.995
1636.3	3	52.074	51.985
1636.4	3	52.074	51.975
1636.5	3	52.053	51.965
1636.6	3	52.053	51.955
1636.7	3	52.053	51.945
1636.8	3	52.053	51.935
1636.9	3	52.053	51.925
1637	3	52.032	51.915
1637.1	3	52.032	51.905
1637.2	3	52.032	51.89
1637.3	3	52.032	51.87
1637.4	3	52.032	51.85
1637.5	3	52.011	51.83
1637.6	3	52.011	51.81
1637.7	3	51.99	51.79
1637.8	3	51.969	51.77

1637.9	3	51.948	51.75
1638	3	51.927	51.73
1638.1	3	51.885	51.71
1638.2	3	51.843	51.69
1638.3	3	51.801	51.67
1638.4	3	51.76	51.65
1638.5	3	51.718	51.63
1638.6	3	51.676	51.61
1638.7	3	51.655	51.59
1638.8	3	51.634	51.57
1638.9	3	51.613	51.55
1639	3	51.613	51.53
1639.1	3	51.613	51.51
1639.2	3	51.613	51.505
1639.3	3	51.613	51.515
1639.4	3	51.613	51.525
1639.5	3	51.634	51.535
1639.6	3	51.634	51.545
1639.7	3	51.655	51.555
1639.8	3	51.676	51.565
1639.9	3	51.697	51.575
1640	3	51.739	51.585
1640.1	3	51.739	51.595
1640.2	3	51.78	51.61
1640.3	3	51.822	51.63
1640.4	3	51.822	51.65
1640.5	3	51.822	51.67
1640.6	3	51.906	51.69
1640.7	3	51.99	51.71
1640.8	3	52.053	51.73
1640.9	3	52.053	51.75
1641	3	52.095	51.77
1641.1	3	52.137	51.79
1641.2	3	52.241	51.815
1641.3	3	52.283	51.845
1641.4	3	52.283	51.875
1641.5	3	52.325	51.905
1641.6	3	52.409	51.935
1641.7	3	52.43	51.965
1641.8	3	52.43	51.995
1641.9	3	52.451	52.025
1642	3	52.472	52.055
1642.1	3	52.514	52.085
1642.2	3	52.514	52.12
1642.3	3	52.535	52.16

1642.4	3	52.556	52.2
1642.5	3	52.576	52.24
1642.6	3	52.618	52.28
1642.7	3	52.618	52.32
1642.8	3	52.618	52.36
1642.9	3	52.639	52.4
1643	3	52.681	52.44
1643.1	3	52.681	52.48
1643.2	3	52.702	52.525
1643.3	3	52.723	52.575
1643.4	3	52.744	52.625
1643.5	3	52.786	52.675
1643.6	3	52.828	52.725
1643.7	3	52.891	52.775
1643.8	3	52.933	52.825
1643.9	3	52.995	52.875
1644	3	53.058	52.925
1644.1	3	53.1	52.975
1644.2	3	53.163	53.025
1644.3	3	53.226	53.075
1644.4	3	53.268	53.125
1644.5	3	53.331	53.175
1644.6	3	53.393	53.225
1644.7	3	53.435	53.275
1644.8	3	53.498	53.325
1644.9	3	53.54	53.375
1645	3	53.603	53.425
1645.1	3	53.645	53.475
1645.2	3	53.687	53.525
1645.3	3	53.749	53.575
1645.4	3	53.791	53.625
1645.5	3	53.854	53.675
1645.6	3	53.896	53.725
1645.7	3	53.938	53.775
1645.8	3	53.98	53.825
1645.9	3	54.043	53.875
1646	3	54.085	53.925
1646.1	3	54.127	53.975
1646.2	3	54.168	54.045
1646.3	3	54.21	54.135
1646.4	3	54.273	54.225
1646.5	3	54.315	54.315
1646.6	3	54.357	54.405
1646.7	3	54.399	54.495
1646.8	3	54.441	54.585

1646.9	3	54.504	54.675
1647	3	54.545	54.765
1647.1	3	54.587	54.855
1647.2	3	54.629	54.925
1647.3	3	54.692	54.975
1647.4	3	54.734	55.025
1647.5	3	54.776	55.075
1647.6	3	54.818	55.125
1647.7	3	54.86	55.175
1647.8	3	54.902	55.225
1647.9	3	54.943	55.275
1648	3	54.943	55.325
1648.1	3	55.027	55.375
1648.2	3	55.069	55.41
1648.3	3	55.111	55.43
1648.4	3	55.153	55.45
1648.5	3	55.195	55.47
1648.6	3	55.216	55.49
1648.7	3	55.258	55.51
1648.8	3	55.3	55.53
1648.9	3	55.3	55.55
1649	3	55.362	55.57
1649.1	3	55.404	55.59
1649.2	3	55.446	55.62
1649.3	3	55.446	55.66
1649.4	3	55.467	55.7
1649.5	3	55.551	55.74
1649.6	3	55.572	55.78
1649.7	3	55.614	55.82
1649.8	3	55.614	55.86
1649.9	3	55.698	55.9
1650	3	55.718	55.94
1650.1	3	55.739	55.98
1650.2	3	55.739	56
1650.3	3	55.781	56
1650.4	3	55.823	56
1650.5	3	55.865	56
1650.6	3	55.865	56
1650.7	3	55.886	56
1650.8	3	55.886	56
1650.9	3	55.907	56
1651	3	55.928	56
1651.1	3	55.928	56
1651.2	3	55.928	55.99
1651.3	3	55.928	55.97

1651.4	3	55.928	55.95
1651.5	3	55.928	55.93
1651.6	3	55.907	55.91
1651.7	3	55.865	55.89
1651.8	3	55.781	55.87
1651.9	3	55.781	55.85
1652	3	55.739	55.83
1652.1	3	55.677	55.81
1652.2	3	55.635	55.77
1652.3	3	55.593	55.71
1652.4	3	55.53	55.65
1652.5	3	55.488	55.59
1652.6	3	55.425	55.53
1652.7	3	55.362	55.47
1652.8	3	55.279	55.41
1652.9	3	55.216	55.35
1653	3	55.174	55.29
1653.1	3	55.111	55.23
1653.2	3	55.048	55.165
1653.3	3	55.006	55.095
1653.4	3	55.006	55.025
1653.5	3	54.881	54.955
1653.6	3	54.818	54.885
1653.7	3	54.755	54.815
1653.8	3	54.692	54.745
1653.9	3	54.629	54.675
1654	3	54.566	54.605
1654.1	3	54.504	54.535
1654.2	3	54.441	54.455
1654.3	3	54.357	54.365
1654.4	3	54.294	54.275
1654.5	3	54.21	54.185
1654.6	3	54.147	54.095
1654.7	3	54.085	54.005
1654.8	3	54.001	53.915
1654.9	3	53.938	53.825
1655	3	53.854	53.735
1655.1	3	53.791	53.645
1655.2	3	53.708	53.545
1655.3	3	53.624	53.435
1655.4	3	53.519	53.325
1655.5	3	53.435	53.215
1655.6	3	53.352	53.105
1655.7	3	53.268	52.995
1655.8	3	53.184	52.885

1655.9	3	53.1	52.775
1656	3	52.995	52.665
1656.1	3	52.912	52.555
1656.2	3	52.828	52.45
1656.3	3	52.744	52.35
1656.4	3	52.66	52.25
1656.5	3	52.556	52.15
1656.6	3	52.472	52.05
1656.7	3	52.388	51.95
1656.8	3	52.304	51.85
1656.9	3	52.22	51.75
1657	3	52.137	51.65
1657.1	3	52.053	51.55
1657.2	3	51.99	51.5
1657.3	3	51.927	51.5
1657.4	3	51.885	51.5
1657.5	3	51.843	51.5
1657.6	3	51.843	51.5
1657.7	3	51.78	51.5
1657.8	3	51.76	51.5
1657.9	3	51.739	51.5
1658	3	51.739	51.5
1658.1	3	51.739	51.5
1658.2	3	51.739	51.5
1658.3	3	51.76	51.5
1658.4	3	51.76	51.5
1658.5	3	51.76	51.5
1658.6	3	51.739	51.5
1658.7	3	51.739	51.5
1658.8	3	51.718	51.5
1658.9	3	51.718	51.5
1659	3	51.718	51.5
1659.1	3	51.676	51.5
1659.2	3	51.592	51.48
1659.3	3	51.529	51.44
1659.4	3	51.529	51.4
1659.5	3	51.466	51.36
1659.6	3	51.32	51.32
1659.7	3	51.257	51.28
1659.8	3	51.173	51.24
1659.9	3	51.173	51.2
1660	3	51.089	51.16
1660.1	3	50.922	51.12
1660.2	3	50.838	51.05
1660.3	3	50.838	50.95

1660.4	3	50.754	50.85
1660.5	3	50.67	50.75
1660.6	3	50.503	50.65
1660.7	3	50.503	50.55
1660.8	3	50.419	50.45
1660.9	3	50.335	50.35
1661	3	50.209	50.25
1661.1	3	50.209	50.15
1661.2	3	50.147	50.095
1661.3	3	50.084	50.085
1661.4	3	50.042	50.075
1661.5	3	49.937	50.065
1661.6	3	49.937	50.055
1661.7	3	49.916	50.045
1661.8	3	49.895	50.035
1661.9	3	49.853	50.025
1662	3	49.853	50.015
1662.1	3	49.853	50.005
1662.2	3	49.853	50.005
1662.3	3	49.853	50.015
1662.4	3	49.853	50.025
1662.5	3	49.874	50.035
1662.6	3	49.895	50.045
1662.7	3	49.916	50.055
1662.8	3	49.937	50.065
1662.9	3	49.958	50.075
1663	3	49.979	50.085
1663.1	3	50	50.095
1663.2	3	50.021	50.095
1663.3	3	50.021	50.085
1663.4	3	50.021	50.075
1663.5	3	50.021	50.065
1663.6	3	50.021	50.055
1663.7	3	50	50.045
1663.8	3	49.979	50.035
1663.9	3	49.979	50.025
1664	3	49.958	50.015
1664.1	3	49.937	50.005
1664.2	3	49.937	49.98
1664.3	3	49.916	49.94
1664.4	3	49.916	49.9
1664.5	3	49.895	49.86
1664.6	3	49.874	49.82
1664.7	3	49.874	49.78
1664.8	3	49.853	49.74

1664.9	3	49.853	49.7
1665	3	49.832	49.66
1665.1	3	49.832	49.62
1665.2	3	49.811	49.595
1665.3	3	49.811	49.585
1665.4	3	49.791	49.575
1665.5	3	49.77	49.565
1665.6	3	49.77	49.555
1665.7	3	49.749	49.545
1665.8	3	49.728	49.535
1665.9	3	49.728	49.525
1666	3	49.707	49.515
1666.1	3	49.686	49.505
1666.2	3	49.686	49.5
1666.3	3	49.665	49.5
1666.4	3	49.665	49.5
1666.5	3	49.644	49.5
1666.6	3	49.644	49.5
1666.7	3	49.623	49.5
1666.8	3	49.623	49.5
1666.9	3	49.602	49.5
1667	3	49.602	49.5
1667.1	3	49.602	49.5
1667.2	3	49.581	49.5
1667.3	3	49.56	49.5
1667.4	3	49.56	49.5
1667.5	3	49.539	49.5
1667.6	3	49.539	49.5
1667.7	3	49.518	49.5
1667.8	3	49.497	49.5
1667.9	3	49.497	49.5
1668	3	49.497	49.5
1668.1	3	49.455	49.5
1668.2	3	49.455	49.48
1668.3	3	49.434	49.44
1668.4	3	49.434	49.4
1668.5	3	49.414	49.36
1668.6	3	49.351	49.32
1668.7	3	49.309	49.28
1668.8	3	49.246	49.24
1668.9	3	49.246	49.2
1669	3	49.204	49.16
1669.1	3	49.078	49.12
1669.2	3	49.036	49.075
1669.3	3	49.036	49.025



1669.4	3	48.995	48.975
1669.5	3	48.89	48.925
1669.6	3	48.848	48.875
1669.7	3	48.806	48.825
1669.8	3	48.806	48.775
1669.9	3	48.764	48.725
1670	3	48.68	48.675
1670.1	3	48.659	48.625
1670.2	3	48.659	48.575
1670.3	3	48.618	48.525
1670.4	3	48.597	48.475
1670.5	3	48.534	48.425
1670.6	3	48.534	48.375
1670.7	3	48.492	48.325
1670.8	3	48.429	48.275
1670.9	3	48.366	48.225
1671	3	48.303	48.175
1671.1	3	48.24	48.125
1671.2	3	48.178	48.055
1671.3	3	48.094	47.965
1671.4	3	47.947	47.875
1671.5	3	47.947	47.785
1671.6	3	47.863	47.695
1671.7	3	47.801	47.605
1671.8	3	47.717	47.515
1671.9	3	47.633	47.425
1672	3	47.549	47.335
1672.1	3	47.465	47.245
1672.2	3	47.382	47.145
1672.3	3	47.298	47.035
1672.4	3	47.235	46.925
1672.5	3	47.151	46.815
1672.6	3	47.067	46.705
1672.7	3	46.984	46.595
1672.8	3	46.9	46.485
1672.9	3	46.795	46.375
1673	3	46.669	46.265
1673.1	3	46.523	46.155
1673.2	3	46.397	46.045
1673.3	3	46.23	45.935
1673.4	3	46.083	45.825
1673.5	3	45.936	45.715
1673.6	3	45.79	45.605
1673.7	3	45.643	45.495
1673.8	3	45.476	45.385

1673.9	3	45.329	45.275
1674	3	45.161	45.165
1674.1	3	44.994	45.055
1674.2	3	44.805	44.94
1674.3	3	44.659	44.82
1674.4	3	44.512	44.7
1674.5	3	44.386	44.58
1674.6	3	44.261	44.46
1674.7	3	44.156	44.34
1674.8	3	44.03	44.22
1674.9	3	43.925	44.1
1675	3	43.8	43.98
1675.1	3	43.695	43.86
1675.2	3	43.569	43.74
1675.3	3	43.444	43.62
1675.4	3	43.339	43.5
1675.5	3	43.213	43.38
1675.6	3	43.109	43.26
1675.7	3	42.983	43.14
1675.8	3	42.878	43.02
1675.9	3	42.752	42.9
1676	3	42.627	42.78
1676.1	3	42.501	42.66
1676.2	3	42.375	42.545
1676.3	3	42.25	42.435
1676.4	3	42.124	42.325
1676.5	3	41.977	42.215
1676.6	3	41.852	42.105
1676.7	3	41.852	41.995
1676.8	3	41.6	41.885
1676.9	3	41.475	41.775
1677	3	41.349	41.665
1677.1	3	41.223	41.555
1677.2	3	41.098	41.44
1677.3	3	40.972	41.32
1677.4	3	40.825	41.2
1677.5	3	40.658	41.08
1677.6	3	40.658	40.96
1677.7	3	40.302	40.84
1677.8	3	40.134	40.72
1677.9	3	39.946	40.6
1678	3	39.946	40.48
1678.1	3	39.778	40.36
1678.2	3	39.506	40.21
1678.3	3	39.401	40.03

1678.4	3	39.296	39.85
1678.5	3	39.296	39.67
1678.6	3	39.191	39.49
1678.7	3	38.982	39.31
1678.8	3	38.877	39.13
1678.9	3	38.877	38.95
1679	3	38.773	38.77
1679.1	3	38.647	38.59
1679.2	3	38.416	38.425
1679.3	3	38.416	38.275
1679.4	3	38.416	38.125
1679.5	3	38.186	37.975
1679.6	3	38.06	37.825
1679.7	3	37.809	37.675
1679.8	3	37.809	37.525
1679.9	3	37.704	37.375
1680	3	37.579	37.225
1680.1	3	37.453	37.075
1680.2	3	37.202	36.91
1680.3	3	37.202	36.73
1680.4	3	37.055	36.55
1680.5	3	36.887	36.37
1680.6	3	36.531	36.19
1680.7	3	36.531	36.01
1680.8	3	36.322	35.83
1680.9	3	36.154	35.65
1681	3	35.966	35.47
1681.1	3	35.798	35.29
1681.2	3	35.631	35.13
1681.3	3	35.463	34.99
1681.4	3	35.295	34.85
1681.5	3	35.107	34.71
1681.6	3	34.939	34.57
1681.7	3	34.772	34.43
1681.8	3	34.625	34.29
1681.9	3	34.499	34.15
1682	3	34.353	34.01
1682.1	3	34.227	33.87
1682.2	3	34.08	33.735
1682.3	3	33.955	33.605
1682.4	3	33.808	33.475
1682.5	3	33.682	33.345
1682.6	3	33.536	33.215
1682.7	3	33.389	33.085
1682.8	3	33.264	32.955

1682.9	3	33.138	32.825
1683	3	32.991	32.695
1683.1	3	32.866	32.565
1683.2	3	32.719	32.45
1683.3	3	32.614	32.35
1683.4	3	32.488	32.25
1683.5	3	32.384	32.15
1683.6	3	32.258	32.05
1683.7	3	32.174	31.95
1683.8	3	32.07	31.85
1683.9	3	31.965	31.75
1684	3	31.86	31.65
1684.1	3	31.776	31.55
1684.2	3	31.693	31.455
1684.3	3	31.609	31.365
1684.4	3	31.504	31.275
1684.5	3	31.42	31.185
1684.6	3	31.336	31.095
1684.7	3	31.253	31.005
1684.8	3	31.169	30.915
1684.9	3	31.085	30.825
1685	3	31.001	30.735
1685.1	3	30.917	30.645
1685.2	3	30.834	30.595
1685.3	3	30.75	30.585
1685.4	3	30.666	30.575
1685.5	3	30.582	30.565
1685.6	3	30.499	30.555
1685.7	3	30.415	30.545
1685.8	3	30.31	30.535
1685.9	3	30.31	30.525
1686	3	30.08	30.515
1686.1	3	29.975	30.505
1686.2	3	29.849	30.475
1686.3	3	29.744	30.425
1686.4	3	29.64	30.375
1686.5	3	29.556	30.325
1686.6	3	29.472	30.275
1686.7	3	29.388	30.225
1686.8	3	29.388	30.175
1686.9	3	29.2	30.125
1687	3	29.116	30.075
1687.1	3	29.032	30.025
1687.2	3	28.948	29.95
1687.3	3	28.948	29.85

1687.4	3	28.781	29.75
1687.5	3	28.697	29.65
1687.6	3	28.592	29.55
1687.7	3	28.592	29.45
1687.8	3	28.509	29.35
1687.9	3	28.341	29.25
1688	3	28.236	29.15
1688.1	3	28.153	29.05
1688.2	3	28.153	28.925
1688.3	3	28.069	28.775
1688.4	3	27.88	28.625
1688.5	3	27.796	28.475
1688.6	3	27.796	28.325
1688.7	3	27.692	28.175
1688.8	3	27.608	28.025
1688.9	3	27.419	27.875
1689	3	27.419	27.725
1689.1	3	27.294	27.575
1689.2	3	27.168	27.365
1689.3	3	26.854	27.095
1689.4	3	26.665	26.825
1689.5	3	26.665	26.555
1689.6	3	26.435	26.285
1689.7	3	26.142	26.015
1689.8	3	25.199	25.745
1689.9	3	25.199	25.475
1690	3	24.633	25.205
1690.1	3	24.005	24.935
1690.2	3	23.335	24.635
1690.3	3	22.204	24.305
1690.4	3	22.204	23.975
1690.5	3	21.889	23.645
1690.6	3	21.68	23.315
1690.7	3	21.512	22.985
1690.8	3	21.366	22.655
1690.9	3	21.261	22.325
1691	3	21.177	21.995
1691.1	3	21.072	21.665
1691.2	3	20.989	21.43
1691.3	3	20.905	21.29
1691.4	3	20.842	21.15
1691.5	3	20.8	21.01
1691.6	3	20.758	20.87
1691.7	3	20.695	20.73
1691.8	3	20.654	20.59

1691.9	3	20.612	20.45
1692	3	20.549	20.31
1692.1	3	20.507	20.17
1692.2	3	20.465	20.05
1692.3	3	20.402	19.95
1692.4	3	20.402	19.85
1692.5	3	20.297	19.75
1692.6	3	20.256	19.65
1692.7	3	20.214	19.55
1692.8	3	20.172	19.45
1692.9	3	20.109	19.35
1693	3	20.067	19.25
1693.1	3	20.025	19.15
1693.2	3	19.983	19.07
1693.3	3	19.92	19.01
1693.4	3	19.879	18.95
1693.5	3	19.816	18.89
1693.6	3	19.732	18.83
1693.7	3	19.627	18.77
1693.8	3	19.501	18.71
1693.9	3	19.376	18.65
1694	3	19.229	18.59
1694.1	3	19.124	18.53
1694.2	3	19.02	18.425
1694.3	3	18.915	18.275
1694.4	3	18.81	18.125
1694.5	3	18.705	17.975
1694.6	3	18.601	17.825
1694.7	3	18.475	17.675
1694.8	3	18.328	17.525
1694.9	3	18.119	17.375
1695	3	17.91	17.225
1695.1	3	17.658	17.075
1695.2	3	17.407	16.925
1695.3	3	17.155	16.775
1695.4	3	16.883	16.625
1695.5	3	16.59	16.475
1695.6	3	16.59	16.325
1695.7	3	16.024	16.175
1695.8	3	15.752	16.025
1695.9	3	15.501	15.875
1696	3	15.228	15.725
1696.1	3	15.228	15.575
1696.2	3	14.621	15.35
1696.3	3	14.307	15.05

1696.4	3	14.055	14.75
1696.5	3	14.055	14.45
1696.6	3	13.783	14.15
1696.7	3	13.238	13.85
1696.8	3	12.945	13.55
1696.9	3	12.631	13.25
1697	3	12.631	12.95
1697.1	3	12.003	12.65
1697.2	3	11.688	12.415
1697.3	3	11.353	12.245
1697.4	3	11.353	12.075
1697.5	3	11.039	11.905
1697.6	3	10.39	11.735
1697.7	3	10.054	11.565
1697.8	3	10.054	11.395
1697.9	3	9.74	11.225
1698	3	9.426	11.055
1698.1	3	8.798	10.885
1698.2	3	8.463	10.66
1698.3	3	8.463	10.38
1698.4	3	8.148	10.1
1698.5	3	7.834	9.82
1698.6	3	7.185	9.54
1698.7	3	7.185	9.26
1698.8	3	6.85	8.98
1698.9	3	6.514	8.7
1699	3	5.886	8.42
1699.1	3	5.886	8.14
1699.2	3	5.593	7.835
1699.3	3	5.3	7.505
1699.4	3	5.027	7.175
1699.5	3	4.462	6.845
1699.6	3	4.462	6.515
1699.7	3	4.189	6.185
1699.8	3	3.917	5.855
1699.9	3	3.645	5.525
1700	3	3.393	5.195
1700.1	3	3.121	4.865
1700.2	3	2.849	4.535
1700.3	3	2.597	4.205
1700.4	3	2.346	3.875
1700.5	3	2.095	3.545
1700.6	3	1.822	3.215
1700.7	3	1.529	2.885
1700.8	3	1.257	2.555

1700.9	3	0.984	2.225
1701	3	0.691	1.895
1701.1	3	0.419	1.565
1701.2	3	0.189	1.33
1701.3	3	0.147	1.19
1701.4	3	0.147	1.05
1701.5	3	0.105	0.91
1701.6	3	0.063	0.77
1701.7	3	0.084	0.63
1701.8	3	0.084	0.49
1701.9	3	0.042	0.35
1702	3	0.042	0.21
1702.1	3	0.063	0.07
1702.2	3	0.021	0
1702.3	3	0.021	0
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1709	3	0	0
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1709.3	3	-0.021	0
1709.4	3	-0.021	0
1709.5	3	0	0
1709.6	3	0	0
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1709.8	3	0	0

1709.9	3	0	0
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1710.4	3	-0.021	0
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1710.6	3	-0.021	0
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1710.9	3	0	0
1711	3	0	0
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1711.3	3	0	0
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1712.9	3	0	0
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1713.1	3	0	0
1713.2	3	-0.021	0
1713.3	3	0	0
1713.4	3	0	0
1713.5	3	0	0
1713.6	3	0	0
1713.7	3	0	0
1713.8	3	0	0
1713.9	3	0	0
1714	3	-0.021	0
1714.1	3	-0.021	0
1714.2	3	-0.021	0
1714.3	3	0	0

1714.4	3	0	0
1714.5	3	-0.021	0
1714.6	3	0	0
1714.7	3	0	0
1714.8	3	0	0
1714.9	3	-0.021	0
1715	3	0	0
1715.1	3	0	0
1715.2	3	0	0.05
1715.3	3	0.021	0.15
1715.4	3	0.021	0.25
1715.5	3	0.042	0.35
1715.6	3	0.042	0.45
1715.7	3	0.084	0.55
1715.8	3	0.105	0.65
1715.9	3	0.168	0.75
1716	3	0.168	0.85
1716.1	3	0.251	0.95
1716.2	3	0.545	1.165
1716.3	3	0.712	1.495
1716.4	3	0.712	1.825
1716.5	3	0.88	2.155
1716.6	3	1.047	2.485
1716.7	3	1.424	2.815
1716.8	3	1.634	3.145
1716.9	3	1.634	3.475
1717	3	1.843	3.805
1717.1	3	2.304	4.135
1717.2	3	2.535	4.465
1717.3	3	2.535	4.795
1717.4	3	2.765	5.125
1717.5	3	3.016	5.455
1717.6	3	3.603	5.785
1717.7	3	3.603	6.115
1717.8	3	3.938	6.445
1717.9	3	4.315	6.775
1718	3	4.692	7.105
1718.1	3	5.53	7.435
1718.2	3	5.53	7.765
1718.3	3	5.949	8.095
1718.4	3	5.949	8.425
1718.5	3	7.289	8.755
1718.6	3	7.289	9.085
1718.7	3	7.75	9.415
1718.8	3	8.19	9.745

1718.9	3	8.609	10.075
1719	3	9.028	10.405
1719.1	3	9.405	10.735
1719.2	3	9.782	11.065
1719.3	3	10.159	11.395
1719.4	3	10.515	11.725
1719.5	3	10.871	12.055
1719.6	3	11.227	12.385
1719.7	3	11.584	12.715
1719.8	3	11.94	13.045
1719.9	3	12.296	13.375
1720	3	12.673	13.705
1720.1	3	13.05	14.035
1720.2	3	13.427	14.355
1720.3	3	13.804	14.665
1720.4	3	14.181	14.975
1720.5	3	14.558	15.285
1720.6	3	14.956	15.595
1720.7	3	15.375	15.905
1720.8	3	15.794	16.215
1720.9	3	16.234	16.525
1721	3	16.653	16.835
1721.1	3	17.072	17.145
1721.2	3	17.491	17.435
1721.3	3	17.91	17.705
1721.4	3	18.308	17.975
1721.5	3	18.685	18.245
1721.6	3	19.02	18.515
1721.7	3	19.313	18.785
1721.8	3	19.564	19.055
1721.9	3	19.795	19.325
1722	3	20.004	19.595
1722.1	3	20.214	19.865
1722.2	3	20.444	20.125
1722.3	3	20.654	20.375
1722.4	3	20.905	20.625
1722.5	3	21.135	20.875
1722.6	3	21.387	21.125
1722.7	3	21.638	21.375
1722.8	3	21.868	21.625
1722.9	3	22.12	21.875
1723	3	22.371	22.125
1723.1	3	22.623	22.375
1723.2	3	22.895	22.56
1723.3	3	23.146	22.68

1723.4	3	23.398	22.8
1723.5	3	23.628	22.92
1723.6	3	23.837	23.04
1723.7	3	24.068	23.16
1723.8	3	24.256	23.28
1723.9	3	24.466	23.4
1724	3	24.675	23.52
1724.1	3	24.864	23.64
1724.2	3	24.864	23.775
1724.3	3	25.199	23.925
1724.4	3	25.346	24.075
1724.5	3	25.492	24.225
1724.6	3	25.618	24.375
1724.7	3	25.618	24.525
1724.8	3	25.848	24.675
1724.9	3	25.953	24.825
1725	3	26.037	24.975
1725.1	3	26.037	25.125
1725.2	3	26.142	25.27
1725.3	3	26.351	25.41
1725.4	3	26.477	25.55
1725.5	3	26.477	25.69
1725.6	3	26.581	25.83
1725.7	3	26.833	25.97
1725.8	3	26.979	26.11
1725.9	3	27.105	26.25
1726	3	27.105	26.39
1726.1	3	27.252	26.53
1726.2	3	27.545	26.675
1726.3	3	27.692	26.825
1726.4	3	27.692	26.975
1726.5	3	27.838	27.125
1726.6	3	27.985	27.275
1726.7	3	28.257	27.425
1726.8	3	28.257	27.575
1726.9	3	28.404	27.725
1727	3	28.55	27.875
1727.1	3	28.844	28.025
1727.2	3	28.844	28.195
1727.3	3	28.99	28.385
1727.4	3	29.137	28.575
1727.5	3	29.263	28.765
1727.6	3	29.493	28.955
1727.7	3	29.493	29.145
1727.8	3	29.619	29.335

1727.9	3	29.724	29.525
1728	3	29.849	29.715
1728.1	3	29.954	29.905
1728.2	3	30.059	30.04
1728.3	3	30.184	30.12
1728.4	3	30.289	30.2
1728.5	3	30.415	30.28
1728.6	3	30.519	30.36
1728.7	3	30.624	30.44
1728.8	3	30.729	30.52
1728.9	3	30.834	30.6
1729	3	30.938	30.68
1729.1	3	31.043	30.76
1729.2	3	31.127	30.84
1729.3	3	31.211	30.92
1729.4	3	31.295	31
1729.5	3	31.357	31.08
1729.6	3	31.441	31.16
1729.7	3	31.504	31.24
1729.8	3	31.588	31.32
1729.9	3	31.651	31.4
1730	3	31.693	31.48
1730.1	3	31.734	31.56
1730.2	3	31.755	31.625
1730.3	3	31.797	31.675
1730.4	3	31.86	31.725
1730.5	3	31.944	31.775
1730.6	3	32.028	31.825
1730.7	3	32.09	31.875
1730.8	3	32.195	31.925
1730.9	3	32.279	31.975
1731	3	32.363	32.025
1731.1	3	32.468	32.075
1731.2	3	32.572	32.135
1731.3	3	32.572	32.205
1731.4	3	32.803	32.275
1731.5	3	32.907	32.345
1731.6	3	33.012	32.415
1731.7	3	33.117	32.485
1731.8	3	33.201	32.555
1731.9	3	33.305	32.625
1732	3	33.41	32.695
1732.1	3	33.515	32.765
1732.2	3	33.599	32.84
1732.3	3	33.682	32.92

1732.4	3	33.745	33
1732.5	3	33.829	33.08
1732.6	3	33.871	33.16
1732.7	3	33.934	33.24
1732.8	3	33.976	33.32
1732.9	3	33.997	33.4
1733	3	34.039	33.48
1733.1	3	34.059	33.56
1733.2	3	34.08	33.645
1733.3	3	34.101	33.735
1733.4	3	34.122	33.825
1733.5	3	34.143	33.915
1733.6	3	34.164	34.005
1733.7	3	34.164	34.095
1733.8	3	34.164	34.185
1733.9	3	34.143	34.275
1734	3	34.143	34.365
1734.1	3	34.143	34.455
1734.2	3	34.143	34.505
1734.3	3	34.122	34.515
1734.4	3	34.143	34.525
1734.5	3	34.122	34.535
1734.6	3	34.122	34.545
1734.7	3	34.122	34.555
1734.8	3	34.122	34.565
1734.9	3	34.122	34.575
1735	3	34.122	34.585
1735.1	3	34.122	34.595
1735.2	3	34.122	34.615
1735.3	3	34.143	34.645
1735.4	3	34.185	34.675
1735.5	3	34.185	34.705
1735.6	3	34.227	34.735
1735.7	3	34.311	34.765
1735.8	3	34.374	34.795
1735.9	3	34.374	34.825
1736	3	34.416	34.855
1736.1	3	34.457	34.885
1736.2	3	34.541	34.895
1736.3	3	34.541	34.885
1736.4	3	34.562	34.875
1736.5	3	34.604	34.865
1736.6	3	34.646	34.854
1736.7	3	34.646	34.845
1736.8	3	34.646	34.835

1736.9	3	34.646	34.825
1737	3	34.646	34.815
1737.1	3	34.583	34.805
1737.2	3	34.583	34.785
1737.3	3	34.541	34.755
1737.4	3	34.499	34.725
1737.5	3	34.457	34.695
1737.6	3	34.416	34.665
1737.7	3	34.374	34.635
1737.8	3	34.332	34.605
1737.9	3	34.29	34.575
1738	3	34.269	34.545
1738.1	3	34.269	34.515
1738.2	3	34.29	34.51
1738.3	3	34.311	34.53
1738.4	3	34.332	34.55
1738.5	3	34.374	34.57
1738.6	3	34.416	34.59
1738.7	3	34.457	34.61
1738.8	3	34.499	34.63
1738.9	3	34.541	34.65
1739	3	34.604	34.67
1739.1	3	34.646	34.69
1739.2	3	34.709	34.74
1739.3	3	34.772	34.82
1739.4	3	34.835	34.9
1739.5	3	34.897	34.98
1739.6	3	34.96	35.06
1739.7	3	35.023	35.14
1739.8	3	35.086	35.22
1739.9	3	35.149	35.3
1740	3	35.212	35.38
1740.1	3	35.274	35.46
1740.2	3	35.337	35.525
1740.3	3	35.379	35.575
1740.4	3	35.442	35.625
1740.5	3	35.505	35.675
1740.6	3	35.547	35.725
1740.7	3	35.61	35.775
1740.8	3	35.651	35.825
1740.9	3	35.693	35.875
1741	3	35.756	35.925
1741.1	3	35.798	35.975
1741.2	3	35.84	36
1741.3	3	35.882	36



1741.4	3	35.924	36
1741.5	3	35.945	36
1741.6	3	35.987	36
1741.7	3	36.008	36
1741.8	3	36.049	36
1741.9	3	36.07	36
1742	3	36.091	36
1742.1	3	36.112	36
1742.2	3	36.112	36
1742.3	3	36.133	36
1742.4	3	36.154	36
1742.5	3	36.154	36
1742.6	3	36.154	36
1742.7	3	36.154	36
1742.8	3	36.175	36
1742.9	3	36.175	36
1743	3	36.175	36
1743.1	3	36.175	36
1743.2	3	36.175	36
1743.3	3	36.175	36
1743.4	3	36.196	36
1743.5	3	36.196	36
1743.6	3	36.196	36
1743.7	3	36.196	36
1743.8	3	36.196	36
1743.9	3	36.196	36
1744	3	36.196	36
1744.1	3	36.196	36
1744.2	3	36.196	36
1744.3	3	36.175	36
1744.4	3	36.154	36
1744.5	3	36.133	36
1744.6	3	36.133	36
1744.7	3	36.112	36
1744.8	3	36.07	36
1744.9	3	36.07	36
1745	3	36.07	36
1745.1	3	36.07	36
1745.2	3	36.07	36
1745.3	3	36.07	36
1745.4	3	36.07	36
1745.5	3	36.07	36
1745.6	3	36.07	36
1745.7	3	36.07	36
1745.8	3	36.091	36

1745.9	3	36.091	36
1746	3	36.091	36
1746.1	3	36.091	36
1746.2	3	36.112	36.005
1746.3	3	36.112	36.015
1746.4	3	36.112	36.025
1746.5	3	36.133	36.035
1746.6	3	36.133	36.045
1746.7	3	36.133	36.055
1746.8	3	36.133	36.065
1746.9	3	36.154	36.075
1747	3	36.154	36.085
1747.1	3	36.154	36.095
1747.2	3	36.154	36.115
1747.3	3	36.175	36.145
1747.4	3	36.175	36.175
1747.5	3	36.175	36.205
1747.6	3	36.175	36.235
1747.7	3	36.196	36.265
1747.8	3	36.196	36.295
1747.9	3	36.217	36.325
1748	3	36.217	36.355
1748.1	3	36.238	36.385
1748.2	3	36.238	36.405
1748.3	3	36.259	36.415
1748.4	3	36.259	36.425
1748.5	3	36.28	36.435
1748.6	3	36.28	36.445
1748.7	3	36.301	36.455
1748.8	3	36.301	36.465
1748.9	3	36.301	36.475
1749	3	36.322	36.485
1749.1	3	36.322	36.495
1749.2	3	36.322	36.495
1749.3	3	36.322	36.485
1749.4	3	36.322	36.475
1749.5	3	36.28	36.465
1749.6	3	36.238	36.455
1749.7	3	36.196	36.445
1749.8	3	36.154	36.435
1749.9	3	36.112	36.425
1750	3	36.049	36.415
1750.1	3	36.008	36.405
1750.2	3	35.966	36.38
1750.3	3	35.903	36.34

1750.4	3	35.861	36.3
1750.5	3	35.819	36.26
1750.6	3	35.777	36.22
1750.7	3	35.735	36.18
1750.8	3	35.714	36.14
1750.9	3	35.672	36.1
1751	3	35.631	36.06
1751.1	3	35.61	36.02
1751.2	3	35.568	35.955
1751.3	3	35.526	35.865
1751.4	3	35.505	35.775
1751.5	3	35.463	35.685
1751.6	3	35.421	35.595
1751.7	3	35.358	35.505
1751.8	3	35.316	35.415
1751.9	3	35.274	35.325
1752	3	35.274	35.235
1752.1	3	35.17	35.145
1752.2	3	35.107	35.05
1752.3	3	35.044	34.95
1752.4	3	34.96	34.85
1752.5	3	34.96	34.75
1752.6	3	34.814	34.65
1752.7	3	34.751	34.55
1752.8	3	34.667	34.45
1752.9	3	34.667	34.35
1753	3	34.604	34.25
1753.1	3	34.457	34.15
1753.2	3	34.374	34.07
1753.3	3	34.311	34.01
1753.4	3	34.311	33.95
1753.5	3	34.143	33.89
1753.6	3	34.08	33.83
1753.7	3	33.997	33.77
1753.8	3	33.997	33.71
1753.9	3	33.934	33.65
1754	3	33.766	33.59
1754.1	3	33.662	33.53
1754.2	3	33.536	33.395
1754.3	3	33.536	33.185
1754.4	3	33.41	32.975
1754.5	3	33.054	32.765
1754.6	3	32.824	32.555
1754.7	3	32.824	32.345
1754.8	3	32.572	32.135

1754.9	3	32.321	31.925
1755	3	31.734	31.715
1755.1	3	31.734	31.505
1755.2	3	31.42	31.28
1755.3	3	31.085	31.04
1755.4	3	30.289	30.8
1755.5	3	29.87	30.56
1755.6	3	29.87	30.32
1755.7	3	29.451	30.08
1755.8	3	29.053	29.84
1755.9	3	28.404	29.6
1756	3	28.404	29.36
1756.1	3	28.173	29.12
1756.2	3	27.964	28.835
1756.3	3	27.775	28.505
1756.4	3	27.587	28.175
1756.5	3	27.398	27.845
1756.6	3	27.231	27.515
1756.7	3	27.042	27.185
1756.8	3	26.854	26.855
1756.9	3	26.665	26.525
1757	3	26.435	26.195
1757.1	3	26.184	25.865
1757.2	3	25.911	25.565
1757.3	3	25.911	25.295
1757.4	3	25.388	25.025
1757.5	3	25.115	24.755
1757.6	3	24.843	24.485
1757.7	3	24.571	24.215
1757.8	3	24.298	23.945
1757.9	3	24.026	23.675
1758	3	23.754	23.405
1758.1	3	23.481	23.135
1758.2	3	23.209	22.865
1758.3	3	22.937	22.595
1758.4	3	22.664	22.325
1758.5	3	22.392	22.055
1758.6	3	22.12	21.785
1758.7	3	21.848	21.515
1758.8	3	21.554	21.245
1758.9	3	21.261	20.975
1759	3	20.947	20.705
1759.1	3	20.654	20.435
1759.2	3	20.36	20.16
1759.3	3	20.046	19.88

1759.4	3	19.753	19.6
1759.5	3	19.46	19.32
1759.6	3	19.145	19.04
1759.7	3	18.831	18.76
1759.8	3	18.517	18.48
1759.9	3	18.224	18.2
1760	3	17.93	17.92
1760.1	3	17.616	17.64
1760.2	3	17.323	17.35
1760.3	3	17.072	17.05
1760.4	3	16.82	16.75
1760.5	3	16.611	16.45
1760.6	3	16.38	16.15
1760.7	3	16.171	15.85
1760.8	3	15.941	15.55
1760.9	3	15.71	15.25
1761	3	15.48	14.95
1761.1	3	15.249	14.65
1761.2	3	14.977	14.375
1761.3	3	14.642	14.125
1761.4	3	14.307	13.875
1761.5	3	13.951	13.625
1761.6	3	13.678	13.375
1761.7	3	13.678	13.125
1761.8	3	13.176	12.875
1761.9	3	12.882	12.625
1762	3	12.547	12.375
1762.1	3	12.191	12.125
1762.2	3	12.191	11.835
1762.3	3	11.458	11.505
1762.4	3	11.102	11.175
1762.5	3	10.725	10.845
1762.6	3	10.725	10.515
1762.7	3	9.95	10.185
1762.8	3	9.573	9.855
1762.9	3	9.196	9.525
1763	3	9.196	9.195
1763.1	3	8.798	8.865
1763.2	3	8.002	8.535
1763.3	3	7.625	8.205
1763.4	3	7.227	7.875
1763.5	3	7.227	7.545
1763.6	3	6.808	7.215
1763.7	3	5.991	6.885
1763.8	3	5.614	6.555

1763.9	3	5.614	6.225
1764	3	5.258	5.895
1764.1	3	4.902	5.565
1764.2	3	4.147	5.235
1764.3	3	3.77	4.905
1764.4	3	3.77	4.575
1764.5	3	3.372	4.245
1764.6	3	2.974	3.915
1764.7	3	2.178	3.585
1764.8	3	2.178	3.255
1764.9	3	1.843	2.925
1765	3	1.571	2.595
1765.1	3	1.299	2.265
1765.2	3	0.775	1.995
1765.3	3	0.775	1.785
1765.4	3	0.524	1.575
1765.5	3	0.293	1.365
1765.6	3	0.147	1.155
1765.7	3	0.147	0.945
1765.8	3	0.147	0.735
1765.9	3	0.084	0.525
1766	3	0.063	0.315
1766.1	3	0.084	0.105
1766.2	3	0.063	0
1766.3	3	0.021	0
1766.4	3	0.042	0
1766.5	3	0.042	0
1766.6	3	0.042	0
1766.7	3	0.021	0
1766.8	3	0.021	0
1766.9	3	0	0
1767	3	0.021	0
1767.1	3	0.021	0
1767.2	3	0	0
1767.3	3	0	0
1767.4	3	0	0
1767.5	3	0	0
1767.6	3	0.021	0
1767.7	3	0	0
1767.8	3	0	0
1767.9	3	0	0
1768	3	0	0
1768.1	3	0	0
1768.2	3	0	0
1768.3	3	0	0

1768.4	3	0	0
1768.5	3	0	0
1768.6	3	0	0
1768.7	3	0	0
1768.8	3	0	0
1768.9	3	0	0
1769	3	0	0
1769.1	3	0	0
1769.2	3	0	0
1769.3	3	0	0
1769.4	3	0	0
1769.5	3	0	0
1769.6	3	0	0
1769.7	3	0	0
1769.8	3	0	0
1769.9	3	0	0
1770	3	0	0
1770.1	3	0	0
1770.2	3	0	0
1770.3	3	0	0
1770.4	3	0	0
1770.5	3	0	0
1770.6	3	0	0
1770.7	3	0	0
1770.8	3	0.021	0
1770.9	3	0.042	0
1771	3	0.042	0
1771.1	3	0.084	0
1771.2	3	0.168	0.13
1771.3	3	0.335	0.39
1771.4	3	0.335	0.65
1771.5	3	0.691	0.91
1771.6	3	0.88	1.17
1771.7	3	1.068	1.43
1771.8	3	1.068	1.69
1771.9	3	1.487	1.95
1772	3	1.718	2.21
1772.1	3	1.969	2.47
1772.2	3	2.22	2.765
1772.3	3	2.22	3.095
1772.4	3	2.786	3.425
1772.5	3	3.058	3.755
1772.6	3	3.331	4.085
1772.7	3	3.331	4.415
1772.8	3	3.624	4.745

1772.9	3	4.294	5.075
1773	3	4.692	5.405
1773.1	3	5.111	5.735
1773.2	3	5.111	6.065
1773.3	3	5.53	6.395
1773.4	3	6.431	6.725
1773.5	3	6.871	7.055
1773.6	3	6.871	7.385
1773.7	3	7.31	7.715
1773.8	3	7.708	8.045
1773.9	3	8.463	8.375
1774	3	8.463	8.705
1774.1	3	8.84	9.035
1774.2	3	9.196	9.365
1774.3	3	9.929	9.695
1774.4	3	10.306	10.025
1774.5	3	10.306	10.355
1774.6	3	10.662	10.685
1774.7	3	11.039	11.015
1774.8	3	11.814	11.345
1774.9	3	11.814	11.675
1775	3	12.212	12.005
1775.1	3	12.631	12.335
1775.2	3	13.05	12.665
1775.3	3	13.469	12.995
1775.4	3	13.909	13.325
1775.5	3	14.349	13.655
1775.6	3	14.788	13.985
1775.7	3	15.228	14.315
1775.8	3	15.689	14.645
1775.9	3	16.15	14.975
1776	3	16.59	15.305
1776.1	3	17.051	15.635
1776.2	3	17.512	15.965
1776.3	3	17.951	16.295
1776.4	3	18.308	16.625
1776.5	3	18.58	16.955
1776.6	3	18.852	17.285
1776.7	3	19.062	17.615
1776.8	3	19.271	17.945
1776.9	3	19.46	18.275
1777	3	19.648	18.605
1777.1	3	19.837	18.935
1777.2	3	20.046	19.265
1777.3	3	20.256	19.595



1777.4	3	20.486	19.925
1777.5	3	20.737	20.255
1777.6	3	20.989	20.585
1777.7	3	21.24	20.915
1777.8	3	21.491	21.245
1777.9	3	21.743	21.575
1778	3	21.994	21.905
1778.1	3	22.266	22.235
1778.2	3	22.518	22.53
1778.3	3	22.79	22.79
1778.4	3	23.041	23.05
1778.5	3	23.314	23.31
1778.6	3	23.586	23.57
1778.7	3	23.858	23.83
1778.8	3	24.131	24.09
1778.9	3	24.361	24.35
1779	3	24.592	24.61
1779.1	3	24.801	24.87
1779.2	3	24.99	25.03
1779.3	3	25.199	25.09
1779.4	3	25.388	25.15
1779.5	3	25.576	25.21
1779.6	3	25.765	25.27
1779.7	3	25.953	25.33
1779.8	3	26.1	25.39
1779.9	3	26.246	25.45
1780	3	26.372	25.51
1780.1	3	26.372	25.57
1780.2	3	26.602	25.695
1780.3	3	26.728	25.885
1780.4	3	26.854	26.075
1780.5	3	26.979	26.265
1780.6	3	27.126	26.455
1780.7	3	27.273	26.645
1780.8	3	27.44	26.835
1780.9	3	27.587	27.025
1781	3	27.587	27.215
1781.1	3	27.901	27.405
1781.2	3	28.048	27.575
1781.3	3	28.194	27.725
1781.4	3	28.194	27.875
1781.5	3	28.32	28.025
1781.6	3	28.592	28.175
1781.7	3	28.739	28.325
1781.8	3	28.865	28.475

1781.9	3	28.865	28.625
1782	3	28.99	28.775
1782.1	3	29.242	28.925
1782.2	3	29.367	29.05
1782.3	3	29.367	29.15
1782.4	3	29.493	29.25
1782.5	3	29.619	29.35
1782.6	3	29.87	29.45
1782.7	3	29.996	29.55
1782.8	3	29.996	29.65
1782.9	3	30.122	29.75
1783	3	30.289	29.85
1783.1	3	30.373	29.95
1783.2	3	30.373	30.005
1783.3	3	30.373	30.015
1783.4	3	30.436	30.025
1783.5	3	30.436	30.035
1783.6	3	30.415	30.045
1783.7	3	30.415	30.055
1783.8	3	30.352	30.065
1783.9	3	30.289	30.075
1784	3	30.163	30.085
1784.1	3	30.163	30.095
1784.2	3	30.101	30.095
1784.3	3	30.038	30.085
1784.4	3	29.996	30.075
1784.5	3	29.912	30.065
1784.6	3	29.912	30.055
1784.7	3	29.891	30.045
1784.8	3	29.87	30.035
1784.9	3	29.849	30.025
1785	3	29.828	30.015
1785.1	3	29.765	30.005
1785.2	3	29.724	29.985
1785.3	3	29.682	29.955
1785.4	3	29.661	29.925
1785.5	3	29.619	29.895
1785.6	3	29.598	29.865
1785.7	3	29.556	29.835
1785.8	3	29.514	29.805
1785.9	3	29.472	29.775
1786	3	29.409	29.745
1786.1	3	29.367	29.715
1786.2	3	29.305	29.68
1786.3	3	29.242	29.64

1786.4	3	29.179	29.6
1786.5	3	29.116	29.56
1786.6	3	29.053	29.52
1786.7	3	28.99	29.48
1786.8	3	28.907	29.44
1786.9	3	28.844	29.4
1787	3	28.781	29.36
1787.1	3	28.718	29.32
1787.2	3	28.655	29.275
1787.3	3	28.592	29.225
1787.4	3	28.53	29.175
1787.5	3	28.467	29.125
1787.6	3	28.404	29.075
1787.7	3	28.362	29.025
1787.8	3	28.32	28.975
1787.9	3	28.299	28.925
1788	3	28.32	28.875
1788.1	3	28.341	28.825
1788.2	3	28.383	28.76
1788.3	3	28.425	28.68
1788.4	3	28.446	28.6
1788.5	3	28.425	28.52
1788.6	3	28.404	28.44
1788.7	3	28.383	28.36
1788.8	3	28.341	28.28
1788.9	3	28.278	28.2
1789	3	28.132	28.12
1789.1	3	27.817	28.04
1789.2	3	27.398	27.85
1789.3	3	26.875	27.55
1789.4	3	26.288	27.25
1789.5	3	25.681	26.95
1789.6	3	25.073	26.65
1789.7	3	24.445	26.35
1789.8	3	23.817	26.05
1789.9	3	23.817	25.75
1790	3	22.811	25.45
1790.1	3	22.539	25.15
1790.2	3	22.35	24.835
1790.3	3	22.35	24.505
1790.4	3	22.078	24.175
1790.5	3	21.973	23.845
1790.6	3	21.868	23.515
1790.7	3	21.743	23.185
1790.8	3	21.743	22.855

1790.9	3	21.533	22.525
1791	3	21.408	22.195
1791.1	3	21.282	21.865
1791.2	3	21.282	21.535
1791.3	3	21.156	21.205
1791.4	3	20.863	20.875
1791.5	3	20.716	20.545
1791.6	3	20.716	20.215
1791.7	3	20.549	19.885
1791.8	3	20.088	19.555
1791.9	3	19.795	19.225
1792	3	19.481	18.895
1792.1	3	19.481	18.565
1792.2	3	19.103	18.235
1792.3	3	18.349	17.905
1792.4	3	17.951	17.575
1792.5	3	17.951	17.245
1792.6	3	17.532	16.915
1792.7	3	17.134	16.585
1792.8	3	16.38	16.255
1792.9	3	16.38	15.925
1793	3	16.024	15.595
1793.1	3	15.605	15.265
1793.2	3	14.684	14.935
1793.3	3	14.265	14.605
1793.4	3	14.265	14.275
1793.5	3	13.951	13.945
1793.6	3	13.678	13.615
1793.7	3	13.196	13.285
1793.8	3	13.196	12.955
1793.9	3	12.945	12.625
1794	3	12.673	12.295
1794.1	3	12.401	11.965
1794.2	3	12.128	11.635
1794.3	3	11.856	11.305
1794.4	3	11.584	10.975
1794.5	3	11.29	10.645
1794.6	3	10.997	10.315
1794.7	3	10.704	9.985
1794.8	3	10.39	9.655
1794.9	3	10.013	9.325
1795	3	9.594	8.995
1795.1	3	9.112	8.665
1795.2	3	8.651	8.335
1795.3	3	8.148	8.005

1795.4	3	7.646	7.675
1795.5	3	7.122	7.345
1795.6	3	6.619	7.015
1795.7	3	6.116	6.685
1795.8	3	5.614	6.355
1795.9	3	5.09	6.025
1796	3	4.545	5.695
1796.1	3	4.001	5.365
1796.2	3	3.519	5.035
1796.3	3	3.519	4.705
1796.4	3	2.744	4.375
1796.5	3	2.409	4.045
1796.6	3	2.137	3.715
1796.7	3	1.864	3.385
1796.8	3	1.634	3.055
1796.9	3	1.403	2.725
1797	3	1.173	2.395
1797.1	3	0.922	2.065
1797.2	3	0.691	1.805
1797.3	3	0.44	1.615
1797.4	3	0.23	1.425
1797.5	3	0.126	1.235
1797.6	3	0.126	1.045
1797.7	3	0.126	0.855
1797.8	3	0.063	0.665
1797.9	3	0.063	0.475
1798	3	0.084	0.285
1798.1	3	0.042	0.095
1798.2	3	0.042	0
1798.3	3	0.042	0
1798.4	3	0.042	0
1798.5	3	0.021	0
1798.6	3	0.021	0
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1798.8	3	0	0
1798.9	3	0.021	0
1799	3	0	0
1799.1	3	0.021	0
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1800.9	3	0	0
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1801.9	3	0	0
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1802.7	3	0	0
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1802.9	3	0	0
1803	3	-0.021	0
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1803.3	3	0	0
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1803.5	3	0	0
1803.6	3	0	0
1803.7	3	0	0
1803.8	3	0	0
1803.9	3	-0.021	0
1804	3	0	0
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1804.4	3	0	0
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1804.6	3	0	0
1804.7	3	0	0
1804.8	3	0	0
1804.9	3	0	0
1805	3	-0.021	0
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1805.2	3	0	0
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1805.4	3	0	0
1805.5	3	-0.021	0
1805.6	3	0	0
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1805.9	3	0	0
1806	3	0	0
1806.1	3	0	0
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1806.5	3	0	0
1806.6	3	0	0
1806.7	3	0	0
1806.8	3	0	0
1806.9	3	-0.021	0
1807	3	0	0
1807.1	3	-0.021	0
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1807.7	3	0	0
1807.8	3	-0.021	0
1807.9	3	0	0
1808	3	0	0
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1808.4	3	-0.021	0
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1808.6	3	-0.021	0
1808.7	3	-0.021	0
1808.8	3	0	0

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1809	3	0	0
1809.1	3	-0.021	0
1809.2	3	-0.021	0
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1809.7	3	-0.021	0
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1809.9	3	0	0
1810	3	-0.021	0
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1810.8	3	-0.021	0
1810.9	3	0	0
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1811.9	3	-0.021	0
1812	3	-0.021	0
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1814.9	3	-0.021	0
1815	3	-0.021	0
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1815.6	3	0	0
1815.7	3	0.021	0
1815.8	3	0.021	0
1815.9	3	0.021	0
1816	3	0.042	0
1816.1	3	0.084	0
1816.2	3	0.147	0.165
1816.3	3	0.272	0.495
1816.4	3	0.44	0.825
1816.5	3	0.607	1.155
1816.6	3	0.754	1.485
1816.7	3	0.901	1.815
1816.8	3	1.089	2.145
1816.9	3	1.278	2.475
1817	3	1.529	2.805
1817.1	3	1.801	3.135
1817.2	3	2.053	3.465
1817.3	3	2.325	3.795
1817.4	3	2.597	4.125
1817.5	3	2.87	4.455
1817.6	3	3.163	4.785
1817.7	3	3.477	5.115
1817.8	3	3.833	5.445

1817.9	3	4.21	5.775
1818	3	4.629	6.105
1818.1	3	5.09	6.435
1818.2	3	5.551	6.765
1818.3	3	6.012	7.095
1818.4	3	6.473	7.425
1818.5	3	6.954	7.755
1818.6	3	6.954	8.085
1818.7	3	7.897	8.415
1818.8	3	8.358	8.745
1818.9	3	8.819	9.075
1819	3	9.258	9.405
1819.1	3	9.258	9.735
1819.2	3	9.992	10.065
1819.3	3	10.327	10.395
1819.4	3	10.662	10.725
1819.5	3	10.662	11.055
1819.6	3	10.997	11.385
1819.7	3	11.73	11.715
1819.8	3	12.128	12.045
1819.9	3	12.526	12.375
1820	3	12.526	12.705
1820.1	3	13.343	13.035
1820.2	3	13.762	13.365
1820.3	3	14.16	13.695
1820.4	3	14.16	14.025
1820.5	3	14.579	14.355
1820.6	3	15.396	14.685
1820.7	3	15.815	15.015
1820.8	3	15.815	15.345
1820.9	3	16.255	15.675
1821	3	16.674	16.005
1821.1	3	17.532	16.335
1821.2	3	17.972	16.665
1821.3	3	17.972	16.995
1821.4	3	18.412	17.325
1821.5	3	18.852	17.655
1821.6	3	19.648	17.985
1821.7	3	19.648	18.315
1821.8	3	19.983	18.645
1821.9	3	20.277	18.975
1822	3	20.57	19.305
1822.1	3	21.093	19.635
1822.2	3	21.093	19.965
1822.3	3	21.093	20.295

1822.4	3	21.638	20.625
1822.5	3	21.931	20.955
1822.6	3	22.204	21.285
1822.7	3	22.497	21.615
1822.8	3	22.769	21.945
1822.9	3	23.041	22.275
1823	3	23.335	22.605
1823.1	3	23.607	22.935
1823.2	3	23.9	23.265
1823.3	3	24.173	23.595
1823.4	3	24.424	23.925
1823.5	3	24.654	24.255
1823.6	3	24.885	24.585
1823.7	3	25.136	24.915
1823.8	3	25.388	25.245
1823.9	3	25.618	25.575
1824	3	25.869	25.905
1824.1	3	26.079	26.235
1824.2	3	26.288	26.47
1824.3	3	26.477	26.618
1824.4	3	26.644	26.75
1824.5	3	26.791	26.89
1824.6	3	26.938	27.03
1824.7	3	27.084	27.17
1824.8	3	27.231	27.31
1824.9	3	27.377	27.45
1825	3	27.545	27.59
1825.1	3	27.692	27.73
1825.2	3	27.859	27.865
1825.3	3	28.048	27.995
1825.4	3	28.215	28.125
1825.5	3	28.404	28.255
1825.6	3	28.571	28.385
1825.7	3	28.76	28.515
1825.8	3	28.948	28.645
1825.9	3	29.158	28.775
1826	3	29.346	28.905
1826.1	3	29.556	29.035
1826.2	3	29.765	29.22
1826.3	3	29.954	29.46
1826.4	3	30.163	29.7
1826.5	3	30.373	29.94
1826.6	3	30.582	30.18
1826.7	3	30.792	30.42
1826.8	3	31.001	30.66

1826.9	3	31.211	30.9
1827	3	31.399	31.14
1827.1	3	31.588	31.38
1827.2	3	31.776	31.575
1827.3	3	31.944	31.725
1827.4	3	32.111	31.875
1827.5	3	32.3	32.025
1827.6	3	32.447	32.175
1827.7	3	32.614	32.325
1827.8	3	32.782	32.475
1827.9	3	32.782	32.625
1828	3	33.075	32.775
1828.1	3	33.222	32.925
1828.2	3	33.368	33.03
1828.3	3	33.368	33.09
1828.4	3	33.62	33.15
1828.5	3	33.766	33.21
1828.6	3	33.892	33.27
1828.7	3	34.018	33.33
1828.8	3	34.018	33.39
1828.9	3	34.143	33.45
1829	3	34.353	33.51
1829.1	3	34.437	33.57
1829.2	3	34.499	33.66
1829.3	3	34.499	33.78
1829.4	3	34.583	33.9
1829.5	3	34.625	34.02
1829.6	3	34.667	34.14
1829.7	3	34.667	34.26
1829.8	3	34.709	34.38
1829.9	3	34.835	34.5
1830	3	34.918	34.62
1830.1	3	34.918	34.74
1830.2	3	35.002	34.815
1830.3	3	35.086	34.845
1830.4	3	35.233	34.875
1830.5	3	35.316	34.905
1830.6	3	35.316	34.935
1830.7	3	35.4	34.965
1830.8	3	35.463	34.995
1830.9	3	35.61	35.025
1831	3	35.61	35.055
1831.1	3	35.672	35.085
1831.2	3	35.714	35.125
1831.3	3	35.777	35.175

1831.4	3	35.861	35.225
1831.5	3	35.861	35.275
1831.6	3	35.903	35.325
1831.7	3	35.945	35.375
1831.8	3	35.987	35.425
1831.9	3	36.028	35.475
1832	3	36.049	35.525
1832.1	3	36.091	35.575
1832.2	3	36.133	35.625
1832.3	3	36.175	35.675
1832.4	3	36.175	35.725
1832.5	3	36.196	35.775
1832.6	3	36.238	35.825
1832.7	3	36.238	35.875
1832.8	3	36.259	35.925
1832.9	3	36.259	35.975
1833	3	36.259	36.025
1833.1	3	36.259	36.075
1833.2	3	36.259	36.095
1833.3	3	36.238	36.085
1833.4	3	36.238	36.075
1833.5	3	36.217	36.065
1833.6	3	36.217	36.055
1833.7	3	36.196	36.045
1833.8	3	36.175	36.035
1833.9	3	36.154	36.025
1834	3	36.133	36.015
1834.1	3	36.091	36.005
1834.2	3	36.049	36.005
1834.3	3	36.028	36.015
1834.4	3	36.008	36.025
1834.5	3	36.028	36.035
1834.6	3	36.049	36.045
1834.7	3	36.07	36.055
1834.8	3	36.091	36.065
1834.9	3	36.112	36.075
1835	3	36.133	36.085
1835.1	3	36.154	36.095
1835.2	3	36.154	36.105
1835.3	3	36.175	36.115
1835.4	3	36.175	36.125
1835.5	3	36.154	36.135
1835.6	3	36.133	36.145
1835.7	3	36.07	36.155
1835.8	3	36.028	36.165

1835.9	3	35.987	36.175
1836	3	35.945	36.185
1836.1	3	35.903	36.195
1836.2	3	35.84	36.19
1836.3	3	35.798	36.17
1836.4	3	35.735	36.15
1836.5	3	35.693	36.13
1836.6	3	35.651	36.11
1836.7	3	35.589	36.09
1836.8	3	35.547	36.07
1836.9	3	35.505	36.05
1837	3	35.442	36.03
1837.1	3	35.4	36.01
1837.2	3	35.358	35.985
1837.3	3	35.316	35.955
1837.4	3	35.295	35.925
1837.5	3	35.295	35.895
1837.6	3	35.295	35.865
1837.7	3	35.316	35.835
1837.8	3	35.358	35.805
1837.9	3	35.4	35.775
1838	3	35.4	35.745
1838.1	3	35.442	35.715
1838.2	3	35.568	35.715
1838.3	3	35.61	35.745
1838.4	3	35.672	35.775
1838.5	3	35.672	35.805
1838.6	3	35.798	35.835
1838.7	3	35.861	35.865
1838.8	3	35.903	35.895
1838.9	3	35.903	35.925
1839	3	35.966	35.955
1839.1	3	36.008	35.985
1839.2	3	36.028	36
1839.3	3	36.008	36
1839.4	3	36.008	36
1839.5	3	35.987	36
1839.6	3	35.924	36
1839.7	3	35.882	36
1839.8	3	35.882	36
1839.9	3	35.84	36
1840	3	35.798	36
1840.1	3	35.714	36
1840.2	3	35.651	35.98
1840.3	3	35.651	35.94

1840.4	3	35.631	35.9
1840.5	3	35.589	35.86
1840.6	3	35.568	35.82
1840.7	3	35.568	35.78
1840.8	3	35.568	35.74
1840.9	3	35.547	35.7
1841	3	35.547	35.66
1841.1	3	35.547	35.62
1841.2	3	35.547	35.595
1841.3	3	35.547	35.585
1841.4	3	35.568	35.575
1841.5	3	35.568	35.565
1841.6	3	35.568	35.555
1841.7	3	35.568	35.545
1841.8	3	35.589	35.535
1841.9	3	35.589	35.525
1842	3	35.589	35.515
1842.1	3	35.589	35.505
1842.2	3	35.61	35.495
1842.3	3	35.61	35.485
1842.4	3	35.61	35.475
1842.5	3	35.631	35.465
1842.6	3	35.631	35.455
1842.7	3	35.651	35.445
1842.8	3	35.651	35.435
1842.9	3	35.672	35.425
1843	3	35.672	35.415
1843.1	3	35.672	35.405
1843.2	3	35.693	35.39
1843.3	3	35.693	35.37
1843.4	3	35.693	35.35
1843.5	3	35.693	35.33
1843.6	3	35.693	35.31
1843.7	3	35.693	35.29
1843.8	3	35.693	35.27
1843.9	3	35.693	35.25
1844	3	35.714	35.23
1844.1	3	35.714	35.21
1844.2	3	35.714	35.2
1844.3	3	35.735	35.2
1844.4	3	35.714	35.2
1844.5	3	35.714	35.2
1844.6	3	35.693	35.2
1844.7	3	35.631	35.2
1844.8	3	35.589	35.2

1844.9	3	35.526	35.2
1845	3	35.484	35.2
1845.1	3	35.421	35.2
1845.2	3	35.379	35.2
1845.3	3	35.316	35.2
1845.4	3	35.295	35.2
1845.5	3	35.253	35.2
1845.6	3	35.233	35.2
1845.7	3	35.233	35.2
1845.8	3	35.233	35.2
1845.9	3	35.233	35.2
1846	3	35.253	35.2
1846.1	3	35.253	35.2
1846.2	3	35.274	35.2
1846.3	3	35.274	35.2
1846.4	3	35.274	35.2
1846.5	3	35.274	35.2
1846.6	3	35.274	35.2
1846.7	3	35.274	35.2
1846.8	3	35.253	35.2
1846.9	3	35.233	35.2
1847	3	35.212	35.2
1847.1	3	35.17	35.2
1847.2	3	35.17	35.2
1847.3	3	35.128	35.2
1847.4	3	35.086	35.2
1847.5	3	35.065	35.2
1847.6	3	35.065	35.2
1847.7	3	35.002	35.2
1847.8	3	34.981	35.2
1847.9	3	34.939	35.2
1848	3	34.939	35.2
1848.1	3	34.939	35.2
1848.2	3	34.96	35.2
1848.3	3	35.002	35.2
1848.4	3	35.002	35.2
1848.5	3	35.023	35.2
1848.6	3	35.044	35.2
1848.7	3	35.107	35.2
1848.8	3	35.128	35.2
1848.9	3	35.128	35.2
1849	3	35.149	35.2
1849.1	3	35.233	35.2
1849.2	3	35.253	35.19
1849.3	3	35.253	35.17



1849.4	3	35.295	35.15
1849.5	3	35.316	35.13
1849.6	3	35.379	35.11
1849.7	3	35.379	35.09
1849.8	3	35.421	35.07
1849.9	3	35.442	35.05
1850	3	35.484	35.03
1850.1	3	35.526	35.01
1850.2	3	35.526	35.005
1850.3	3	35.568	35.015
1850.4	3	35.568	35.025
1850.5	3	35.61	35.035
1850.6	3	35.61	35.045
1850.7	3	35.631	35.055
1850.8	3	35.631	35.065
1850.9	3	35.651	35.075
1851	3	35.672	35.085
1851.1	3	35.693	35.095
1851.2	3	35.693	35.105
1851.3	3	35.693	35.115
1851.4	3	35.693	35.125
1851.5	3	35.672	35.135
1851.6	3	35.651	35.145
1851.7	3	35.631	35.155
1851.8	3	35.631	35.165
1851.9	3	35.61	35.175
1852	3	35.568	35.185
1852.1	3	35.547	35.195
1852.2	3	35.526	35.215
1852.3	3	35.484	35.245
1852.4	3	35.463	35.275
1852.5	3	35.421	35.305
1852.6	3	35.4	35.335
1852.7	3	35.4	35.365
1852.8	3	35.421	35.395
1852.9	3	35.421	35.425
1853	3	35.442	35.455
1853.1	3	35.463	35.485
1853.2	3	35.484	35.485
1853.3	3	35.484	35.455
1853.4	3	35.505	35.425
1853.5	3	35.526	35.395
1853.6	3	35.526	35.365
1853.7	3	35.526	35.335
1853.8	3	35.547	35.305

1853.9	3	35.526	35.275
1854	3	35.505	35.245
1854.1	3	35.484	35.215
1854.2	3	35.442	35.19
1854.3	3	35.379	35.17
1854.4	3	35.316	35.15
1854.5	3	35.253	35.13
1854.6	3	35.17	35.11
1854.7	3	35.107	35.09
1854.8	3	35.065	35.07
1854.9	3	35.002	35.05
1855	3	34.96	35.03
1855.1	3	34.918	35.01
1855.2	3	34.897	35
1855.3	3	34.855	35
1855.4	3	34.814	35
1855.5	3	34.793	35
1855.6	3	34.772	35
1855.7	3	34.73	35
1855.8	3	34.73	35
1855.9	3	34.709	35
1856	3	34.688	35
1856.1	3	34.667	35
1856.2	3	34.667	35
1856.3	3	34.625	35
1856.4	3	34.604	35
1856.5	3	34.604	35
1856.6	3	34.625	35
1856.7	3	34.625	35
1856.8	3	34.667	35
1856.9	3	34.688	35
1857	3	34.709	35
1857.1	3	34.709	35
1857.2	3	34.751	34.99
1857.3	3	34.772	34.97
1857.4	3	34.793	34.95
1857.5	3	34.814	34.93
1857.6	3	34.814	34.91
1857.7	3	34.835	34.89
1857.8	3	34.876	34.87
1857.9	3	34.897	34.85
1858	3	34.897	34.83
1858.1	3	34.918	34.81
1858.2	3	34.918	34.79
1858.3	3	34.939	34.77

1858.4	3	34.96	34.75
1858.5	3	34.96	34.73
1858.6	3	34.96	34.71
1858.7	3	34.96	34.69
1858.8	3	34.96	34.67
1858.9	3	34.96	34.65
1859	3	34.939	34.63
1859.1	3	34.918	34.61
1859.2	3	34.876	34.595
1859.3	3	34.876	34.585
1859.4	3	34.855	34.575
1859.5	3	34.835	34.565
1859.6	3	34.772	34.555
1859.7	3	34.772	34.545
1859.8	3	34.751	34.535
1859.9	3	34.709	34.525
1860	3	34.667	34.515
1860.1	3	34.562	34.505
1860.2	3	34.562	34.45
1860.3	3	34.499	34.35
1860.4	3	34.437	34.25
1860.5	3	34.374	34.15
1860.6	3	34.311	34.05
1860.7	3	34.248	33.95
1860.8	3	34.185	33.85
1860.9	3	34.101	33.75
1861	3	34.039	33.65
1861.1	3	33.955	33.55
1861.2	3	33.955	33.425
1861.3	3	33.808	33.275
1861.4	3	33.703	33.125
1861.5	3	33.578	32.975
1861.6	3	33.389	32.825
1861.7	3	33.201	32.675
1861.8	3	33.033	32.525
1861.9	3	32.845	32.375
1862	3	32.698	32.225
1862.1	3	32.572	32.075
1862.2	3	32.447	31.905
1862.3	3	32.342	31.715
1862.4	3	32.237	31.525
1862.5	3	32.111	31.335
1862.6	3	31.986	31.145
1862.7	3	31.818	30.955
1862.8	3	31.63	30.765

1862.9	3	31.357	30.575
1863	3	31.085	30.385
1863.1	3	30.771	30.195
1863.2	3	30.394	29.995
1863.3	3	29.975	29.785
1863.4	3	29.535	29.575
1863.5	3	29.095	29.365
1863.6	3	28.697	29.155
1863.7	3	28.32	28.945
1863.8	3	28.006	28.735
1863.9	3	27.755	28.525
1864	3	27.545	28.315
1864.1	3	27.315	28.105
1864.2	3	27.105	27.875
1864.3	3	26.896	27.625
1864.4	3	26.686	27.375
1864.5	3	26.456	27.125
1864.6	3	26.246	26.875
1864.7	3	26.016	26.625
1864.8	3	25.806	26.375
1864.9	3	25.597	26.125
1865	3	25.367	25.875
1865.1	3	25.157	25.625
1865.2	3	24.948	25.35
1865.3	3	24.717	25.05
1865.4	3	24.487	24.75
1865.5	3	24.235	24.45
1865.6	3	23.963	24.15
1865.7	3	23.691	23.85
1865.8	3	23.691	23.55
1865.9	3	23.104	23.25
1866	3	22.832	22.95
1866.1	3	22.539	22.65
1866.2	3	22.266	22.365
1866.3	3	22.266	22.095
1866.4	3	21.701	21.825
1866.5	3	21.366	21.555
1866.6	3	20.968	21.285
1866.7	3	20.968	21.015
1866.8	3	20.13	20.745
1866.9	3	19.69	20.475
1867	3	19.25	20.205
1867.1	3	19.25	19.935
1867.2	3	18.81	19.635
1867.3	3	18.035	19.305

1867.4	3	17.7	18.975
1867.5	3	17.428	18.645
1867.6	3	17.428	18.315
1867.7	3	17.197	17.985
1867.8	3	16.82	17.655
1867.9	3	16.632	17.325
1868	3	16.632	16.995
1868.1	3	16.443	16.665
1868.2	3	16.255	16.335
1868.3	3	15.899	16.005
1868.4	3	15.899	15.675
1868.5	3	15.71	15.345
1868.6	3	15.522	15.015
1868.7	3	15.145	14.685
1868.8	3	14.914	14.355
1868.9	3	14.914	14.025
1869	3	14.6	13.695
1869.1	3	14.202	13.365
1869.2	3	13.322	13.055
1869.3	3	13.322	12.765
1869.4	3	12.903	12.475
1869.5	3	12.505	12.185
1869.6	3	12.086	11.895
1869.7	3	11.688	11.605
1869.8	3	11.311	11.315
1869.9	3	10.913	11.025
1870	3	10.536	10.735
1870.1	3	10.18	10.445
1870.2	3	9.824	10.145
1870.3	3	9.447	9.835
1870.4	3	9.091	9.525
1870.5	3	8.756	9.215
1870.6	3	8.4	8.905
1870.7	3	8.065	8.595
1870.8	3	7.729	8.285
1870.9	3	7.394	7.975
1871	3	7.059	7.665
1871.1	3	6.724	7.355
1871.2	3	6.41	7.04
1871.3	3	6.075	6.72
1871.4	3	5.76	6.4
1871.5	3	5.467	6.08
1871.6	3	5.153	5.76
1871.7	3	4.839	5.44
1871.8	3	4.545	5.12

1871.9	3	4.231	4.8
1872	3	3.938	4.48
1872.1	3	3.624	4.16
1872.2	3	3.331	3.85
1872.3	3	3.016	3.55
1872.4	3	2.702	3.25
1872.5	3	2.367	2.95
1872.6	3	2.053	2.65
1872.7	3	1.718	2.35
1872.8	3	1.382	2.05
1872.9	3	1.047	1.75
1873	3	0.712	1.45
1873.1	3	0.398	1.15
1873.2	3	0.189	0.95
1873.3	3	0.189	0.85
1873.4	3	0.168	0.75
1873.5	3	0.105	0.65
1873.6	3	0.084	0.55
1873.7	3	0.105	0.45
1873.8	3	0.084	0.35
1873.9	3	0.042	0.25
1874	3	0.063	0.15
1874.1	3	0.063	0.05
1874.2	0	0.063	0
1874.3	0	0.042	0
1874.4	0	0.042	0
1874.5	0	0.021	0
1874.6	0	0.021	0
1874.7	0	0.021	0
1874.8	0	0	0
1874.9	0	0.021	0
1875	0	0	0
1875.1	0	0.021	0

**To:** richard.thomas@vw.com[richard.thomas@vw.com]  
**From:** Good, David  
**Sent:** Tue 2/11/2014 5:44:24 PM  
**Subject:** FW: EOS duplicates?  
2011 FEGuide1-for DOE-OK to release-no sales-1-28-2014-Rel9 macro EOS.xlsx

Richard,

Please take a look at the spreadsheet. I think the data in the 2<sup>nd</sup> line (the ADD data) is correct and that it replaces the data in the first line.

Let me know.

Thanks

**From:** Hopson, Janet L. [mailto:hopsonjl@ornl.gov]  
**Sent:** Monday, February 10, 2014 2:22 PM  
**To:** Good, David  
**Subject:** FW: EOS duplicates?

Dave:

Could you let us know what to do with these two?

Thanks,

Janet

**From:** Li, Jia

**Sent:** Monday, February 10, 2014 2:20 PM  
**To:** Hopson, Janet L.  
**Subject:** EOS duplicates?

Janet,

These two looks like duplicates, but they have different ID.. not sure what to do.

Lisa



Update	Model Yr	Mfr Name	Division	Carline	Verify Mfr Index (Mo	Eng Displ # Cyl	Trans in FE
We have	2011	Audi	Volkswage	EOS	ADX	58 2.0	4 Manual(M€
ADD	2011	Volkswage	Volkswage	EOS	VWX	158 2.0	4 Manual(M€

City	Permit type	Permit date entered	Permit entered after May 13, 2011	Unrdrd	Comb Unrdrd	City Unrdrd	Hwy Unrdrd	Comb Unrdrd	Guzzler?
21	31	25	26.0007	41.3706	31.2202	21.1346	30.8063	24.6117	
21	31	25	26.0007	41.3706	31.2202	21.1346	30.8063	24.6117	

Additional Fuel	Aspir	Aspira	Trans	Trans Des	Trans, Otr	# Gears	Trans Loc	Trans Cre	Drive Sys
TC	Turbocharç	M	Manual			6N	N	F	
TC	Turbocharç	M	Manual			6N	N	F	

Drive Desc	Max Ethar	Max Biodi	Range1 - IFuel	UsagFuel	UsagFuel	Unit	Fuel Unit	Gas Guzzl
2-Wheel Drive, Front			GP	Gasoline (IMPG			miles per cN	
2-Wheel Drive, Front	10		GP	Gasoline (IMPG			miles per cN	

Where Truck = 1975 NHTSA truck definition)					Annual Fuel	EPA Calc	City2 FE (
Gas Guzzler	2Dr Pass	2Dr Lugg	4Dr Pass	4Dr Lugg	Htchbk Pa	Htchbk Lu	
Not exemp	77	11			1920	1920	
Not exemp	77	11			1920	1920	

N/A  
Annual fuel cost error. Please revise. Verify.  
Fuel2 Use Comb2 P0 City2 Unr Hwy2 Unr Comb2 Unr City2 Unr Hwy2 Unr Comb2 Unr Range2 - Fuel2 Usa

Intake	Exhaust	Carline	CI	Carline	CI
Val	VC	Carline	CI	Carline	CI
SIDI;	2	23	Subcompa		
SIDI;	2	23	Subcompa		

Car/Truck	Calc Appr	Release	DEPA	FE L	Empty	Unique La	Label Rec	Relabel	Relabel D	Suppress
car	Vehicle Sp	8/27/2010	4571		N	N			N	
car	Vehicle Sp	8/27/2010	9700		N	N			N	



Police/EmComment	Cyl Deact	Cyl Deact	Var Valve	Var Valve	Var Valve	Var Valve	Energy St	Energy St
N	N		Y	CONTINU	N			
N	N		Y	CONTINU	N			

Device	If Other	Battery Ty	Battery Ty	Total Volt	Batt Ener	Batt Spec	Batt Char	Comment	#	Capacit	Regen Bra
--------	----------	------------	------------	------------	-----------	-----------	-----------	---------	---	---------	-----------

type, Design

If Other Rated Motor	Fuel Meter	Fuel Meter	Fuel Meter	Fuel Meter	Fuel Cell V	Off Board	Camless V	Oil Viscosi	Eng Mgmt
			GDI	Spark Ignit			N	5W40 / VVN	
			GDI	Spark Ignit			N	5W40 / VVN	

Stop/Start Code	Charge	De Charge	De Charge	Su: Charge	Su: Charge	EPA Calcul	EPA Calcul	MFR Calcul	EPA Calculated G
No									
No	as Volkswæ								31.3













Mr. Richard E Thomas Jr.  
Mr. Richard E Thomas Jr.

**To:** Good, David[good.david@epa.gov]  
**From:** Terry.Anderson@dot.gov  
**Sent:** Tue 2/11/2014 8:40:56 PM  
**Subject:** RE: NHTSA Definition of an Automobile for FE Labels/CAFE and GHG

Dave,

I'm still waiting on a response from Legal on your "definition of an automobile" question.

We also continue to wait for a determination on the "definition of model year" to bring the VW/Porsche merger to closure.

By the way, how is model year defined for EPA GHG reporting?

Terry

**From:** Anderson, Terry (NHTSA)  
**Sent:** Monday, February 03, 2014 10:18 AM  
**To:** 'Good, David'  
**Cc:** Thompson, Harry (NHTSA)  
**Subject:** RE: NHTSA Definition of an Automobile for FE Labels/CAFE and GHG

Dave,

We are gathering information from those involved with writing the rule. I hope to have a response ready for you by Wednesday.

Terry

Also, VW/Porsche did not agree with our decision to combine their MY 2012 fleets. I will update you when we (NHTSA) decide how to respond.

**From:** Good, David [<mailto:good.david@epa.gov>]  
**Sent:** Thursday, January 30, 2014 6:28 PM  
**To:** Thompson, Harry (NHTSA)  
**Cc:** Anderson, Terry (NHTSA); Ott, William; Anderson, Tom  
**Subject:** FW: NHTSA Definition of an Automobile for FE Labels/CAFE and GHG

Harry or Terry,

Please let me know how to interpret the 10,000 requirement in the provisions of 49 CFR 523.3. [I think the 10,000 requirement is new within the last 5 years or so---so there must be some preamble language to explain the background of why it was added.]

Does that paragraph mean that limo manufacturers, Roush (who is the final stage manufacturer for some current hot rod Ford cars and trucks) and other “final stage manufacturers” don’t have to comply with CAFE requirements if they don’t exceed 10,000 units?

See the forwarded email message below.

Thanks

**From:** Anderson, Tom  
**Sent:** Thursday, January 30, 2014 2:58 PM  
**To:** Good, David  
**Subject:** NHTSA Definition of an Automobile for FE Labels/CAFE and GHG

DAVE,

Below is the NHTSA reg reference that William was referencing in our earlier discussion. Please send the question on the final stage manufacturer question to NHTSA (i.e. is a final stage manufacturer responsible for FE labels/CAFÉ and GHG if they produce 10,000 or less vehicles – this is what our interpretation of these regs??).

**Authority:** 49 U.S.C. 32901, delegation of authority at 49 CFR 1.50.

§ 523.3 Automobile.

**(a) An automobile is any 4-wheeled vehicle that is propelled by fuel, or by alternative fuel, manufactured primarily for use on public streets, roads, and highways and rated at less than 10,000 pounds gross vehicle weight, except:**

(1) A vehicle operated only on a rail line;

(2) A vehicle manufactured in different stages by 2 or more manufacturers, if no intermediate or final-stage manufacturer of that vehicle manufactures more than 10,000 multi-stage vehicles per year; or

(3) A work truck.

(b) The following vehicles rated at more than 6,000 pounds and less than 10,000 pounds gross vehicle weight are determined to be automobiles:

(1) Vehicles which would satisfy the criteria in §523.4 (relating to passenger automobiles) but for their gross vehicle weight rating.

(2) Vehicles which would satisfy the criteria in §523.5 (relating to light trucks) but for their gross vehicle weight rating, and which

(i) Have a basic vehicle frontal area of 45 square feet or less,

(ii) Have a curb weight of 6,000 pounds or less,

(iii) Have a gross vehicle weight rating of 8,500 pounds or less, and

(iv) Are manufactured during the 1980 model year or thereafter.

(3) Vehicles that are defined as medium duty passenger vehicles, and which are manufactured during the 2011 model year or thereafter.

(Sec. 9, Pub. L. 89–670, 80 Stat. 981 (49 U.S.C. 1657); sec. 301, Pub. L. 94–163, 89 Stat. 901

(15 U.S.C. 2002); delegation of authority at 41 FR 25015, June 22, 1976)

[42 FR 38362, July 28, 1977, as amended at 43 FR 12013, Mar. 23, 1978; 44 FR 4493, Jan. 2, 1979; 71 FR 17676, Apr. 6, 2006; 74 FR 14449, Mar. 30, 2009]

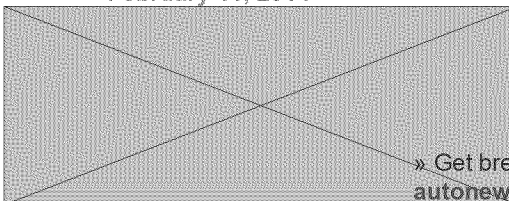
Tom

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 2/11/2014 9:51:06 PM  
**Subject:** DAILY: Jeep Cherokee falls short in Consumer Reports tests | Chevy's 'United' fiasco | Corker urges VW workers to reject UAW | Fiat rating cut | The dash to 30 mpg and pickup gold

Today's most read story

**UAW vote at VW plant has high stakes for industry, labor**

February 11, 2014



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#### TOP NEWS

### **Jeep Cherokee falls short in Consumer Reports testing**

3:40 pm U.S. ET | Feb 11

Consumer Reports is declining to recommend the 2014 Jeep Cherokee, describing the mid-sized SUV after testing as an “uneven package” and deeming it “half-baked.” ... » [READ](#)

### **GM rolls back contentious terms in purchasing contract**

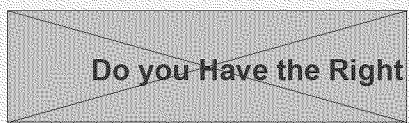
UPDATED: 2/11/14 3:35 pm ET - Details added

8:00 am U.S. ET | Feb 11

GM is rolling back controversial changes it made last year to its purchasing contract, including new terms that some suppliers believed exposed them to greater warranty liability. GM in July rolled out the biggest overhaul to its supplier contract framework in 20 years.

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## **Aston Martin recall highlights risk of China parts supply**

12:16 pm U.S. ET | Feb 11

Aston Martin's sweeping recall of its high-end sports cars last week raises larger questions about the risk to global automakers of sourcing key parts thousands of miles away in China without implementing adequate quality control measures. ... » [READ](#)

2014 GENEVA MOTOR SHOW

## **Mercedes' 'supreme' S-class coupe undergoes 'radical' makeover**

4:00 am U.S. ET | Feb 11

The redesigned Mercedes-Benz S-class coupe, with its sensuous lines and sporty proportions, is going for the jugular of its pricey rivals. ... » [READ](#)

## **Dealers, small businesses get further delay in health-care coverage rules**

UPDATED: 2/10/14 6:13 pm ET - adds NADA statement  
4:57 pm U.S. ET | Feb 10

Employers with fewer than 100 workers, including many new-car dealers, won't have to provide health insurance until 2016 under the U.S. Affordable Health Care Act, as the administration said it would again delay a key requirement of the health law. ... » [READ](#)

## **Corker urges VW workers to reject UAW**

4:10 pm U.S. ET | Feb 11

Senator Bob Corker of Tennessee today urged workers at the Volkswagen plant in Chattanooga to vote down UAW representation this week, saying the union drive is already hurting efforts to recruit other companies. ... » [READ](#)

### **ON THE BLOGS**

[RICHARD TRUETT](#)

**The mad truck dash to 30 mpg on highway and pickup gold**  
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### **PHOTO GALLERIES**

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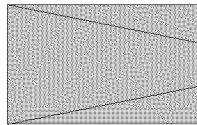
- » [UAW vote at VW plant has high stakes for industry, labor](#)
- » [Clouds on the auto sales horizon](#)
- » [Next long shot for Sergio: Put Maserati on the map](#)
- » [Tenn. politicians threaten to kill VW incentives if UAW wins election](#)
- » [Detroit 3 adopt common standard for tow ratings](#)

## [Viral video rankings for week of 2/10/2014](#)

### [Chrysler gains viral edge in Bowl ad boost](#)

12:01 am U.S. ET | Feb 11

The Super Bowl marketing boost continues as Chrysler spots rack up clicks in the week following the game. ... » [Watch the videos](#)



- » [2/11 - Mobile Shoppers](#) by [Cars.com](#)
- » [3/20 - Is your website engaging?](#) by [Dataium](#)

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### [MARK RECHTIN](#)

### [Chevy's \\$600 million Manchester United deal turning into a fiasco](#)

3:52 pm U.S. ET | Feb 11

Chevrolet's controversial \$600 million sponsorship deal of English soccer giant Manchester United can't get any worse, can it? ... » [READ](#)

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- » [June 3, 2014 - Rising Stars](#)
- » [June 4, 2014 - ANE Congress](#)
- » [Sept. 18 - NY Marketing Seminar](#)

**earnings worry, outlook**

4:29 pm U.S. ET | Feb 11

**Ford dealership loses Super Bowl bet, pays out \$300,000 to customers**

11:48 am U.S. ET | Feb 11

**GM sells record 348,000 units in China in January**

6:36 am U.S. ET | Feb 11

**Porsche CEO sees sales exceeding 200,000 in 2015 on Macan demand**

6:39 am U.S. ET | Feb 11

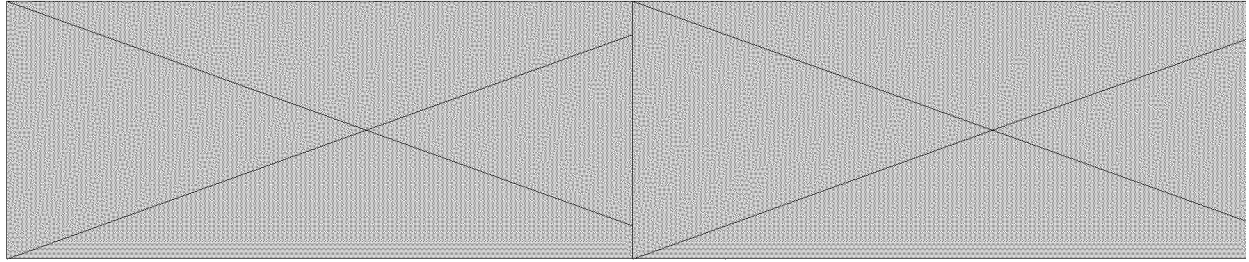
**Mercedes sales growth tops BMW on compact car surge**

4:49 am U.S. ET | Feb 11

**GM to spend \$342 million expanding Opel diesel-engine plant in Poland**

7:28 am U.S. ET | Feb 11





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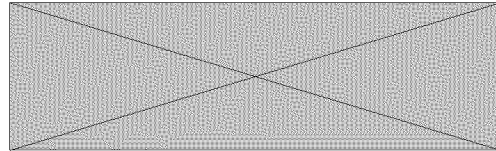
Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Wed 2/12/2014 2:13:02 PM  
**Subject:** A.M. NEWSCAST: Toyota recalls 1.9M Priuses | Canada boosts auto aid | Decision time at VW plant

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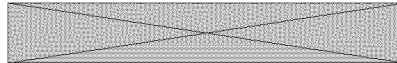
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**[Recall of 1.9M Priuses »](#)**

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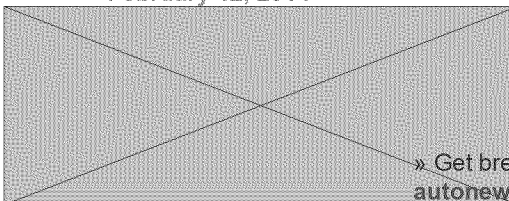
..

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Wed 2/12/2014 9:48:01 PM  
**Subject:** DAILY: Rising stockpiles, drop in showroom traffic spark rise in discounts | Sinkhole swallows 8 Corvettes | Lexus keeps dependability crown; GM scores 2 spots in top 5

Today's most read story

**GM rolls back contentious terms in purchasing contract**

February 12, 2014



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## TOP NEWS

### **ANALYSIS**

### **Rising stockpiles, drop in showroom traffic spark rise in discounts**

3:59 pm U.S. ET | Feb 12

A one-two punch of bad weather and overproduction has ignited a price war among car dealers and manufacturers in the United States. ... » [READ](#)

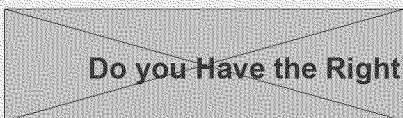
### **Sinkhole swallows 8 vehicles at Corvette museum in Ky.**

UPDATED: 2/12/14 3:48 pm ET - adds photo, video, details

11:08 am U.S. ET | Feb 12

Eight vehicles in the Skydome area of the National Corvette Museum in Bowling Green, Ky., were swallowed by a massive sink hole at about 5:40 a.m. today, the museum said. ... » [READ](#)

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customers? [Unlock Your Profit Potential](#)

## **Lexus keeps J.D. Power dependability crown; GM scores 2 spots in top 5**

UPDATED: 2/12/14 12:30 pm - adds full brand rankings  
10:00 am U.S. ET | Feb 12

Lexus again is the most dependable auto brand after three years of ownership while two General Motors marques joined the top five, J.D. Power and Associates said today. ... » [READ](#)

## **Toyota recalls Prius models to update software**

4:37 am U.S. ET | Feb 12

North American Toyota dealers will be asked to reprogram software in about 713,000 Prius models as part of the biggest recall of the world's best selling hybrid. The global callback extends to 1.9 million Prius models, making it the biggest recall of the world's best-selling hybrid. ... » [READ](#)

## **BMW, Kia plants cancel shifts because of winter storm**

UPDATED: 2/12/14 4:17 pm ET - adds Kia shift canceled  
1:33 pm U.S. ET | Feb 12

BMW and Kia canceled shifts at their plants in the United States today because of severe winter weather in the Southeast. A winter storm warning is in effect until Thursday evening for the area, with snow and ice potentially causing power outages and treacherous roadways. ... » [READ](#)

### **BEST PRACTICES**

## **Store mines second-chance sales**

12:01 am U.S. ET | Feb 10

For Ford dealer Ryan Kirkpatrick, 140 simple characters are rescuing potential sales that otherwise might have gone elsewhere. ... » [READ](#)

### **DEALER BEST PRACTICES TIPS**

#### **Charity test drives can drive leads, sales**

Grogan's Towne Chrysler-Jeep-Dodge-Ram in Toledo, Ohio, sponsors charity test drives that create community good will -- and potential leads and new-vehicle sales. The advantages far outweigh the roughly \$2,000 cost. The drives usually result in at least a handful of sales. ...

» [GO TO BEST PRACTICES](#)

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[NICK BUNKLEY](#)

**The disappearing GM gender pay gap that wasn't**

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» Tenn. politicians threaten to kill VW incentives if UAW wins election  
» GM rolls back contentious terms in purchasing contract  
» Jeep Cherokee falls short in Consumer Reports testing  
» Chevy's \$600 million Manchester United deal turning into a fiasco  
» UAW vote at VW plant has high stakes for industry, labor

**Fiat casts Sean Combs in desert spot highlighting 500L**

UPDATED: 2/12/14 10:05 am ET - adds video

10:00 am U.S. ET | Feb 12

**Canada hikes auto fund by \$453 million to lure Chrysler investment**

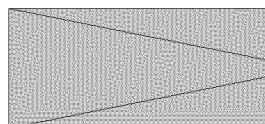
UPDATED: 2/11/14 6:04 pm ET  
4:34 pm U.S. ET | Feb 11

**Japanese auto workers seek pay raises amid soaring profits**

8:14 am U.S. ET | Feb 12

**Ferrari unveils greener California with turbocharged V-8**

6:47 am U.S. ET | Feb 12



» 3/20 - Is your website engaging? by Dataium

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» March 21, 2014 - Nominate Your Best Dealerships

» April 7, 2014 - PACE Awards

» May 14 - Marketing Seminar - Los Angeles

» June 3, 2014 - Rising Stars

» June 4, 2014 - ANE Congress

» Sept. 18 - NY Marketing Seminar



**Ford January sales in China  
rise 53%**

6:47 am U.S. ET | Feb 12

**Ford pushes dealers toward  
paid search, digital  
advertising**

12:01 am U.S. ET | Feb 10

**Marketing, ad firms join  
forces to pursue Nissan  
brand clarity**

12:01 am U.S. ET | Feb 10

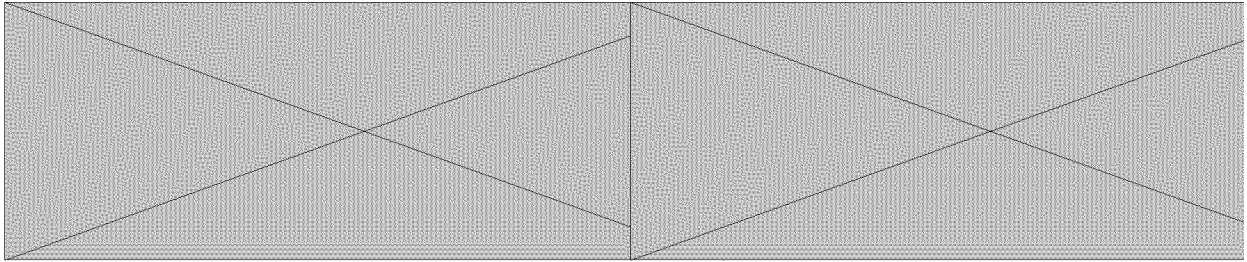
**Faurecia second-half profit  
jumps 34% on Asia growth**

7:42 am U.S. ET | Feb 12

**Guitars, not cars, get rockin'  
Boch a magazine spread**

12:01 am U.S. ET | Feb 10





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**Cc:** [Ex. 7] Kaori Alarid  
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 (tolson@energy.state.ca.us)[tolson@energy.state.ca.us]; William Craven  
 (william.b.craven@daimler.com)[william.b.craven@daimler.com]

**From:** Linda Carrizosa  
**Sent:** Fri 2/14/2014 1:02:04 AM  
**Subject:** CaFCP Steering Team Meeting Conference call for March and April have been finalized

Good Afternoon Steering Team Members:

Thank you for participating in the doodle poll to help in finding a time best for the majority for the March and April ST meeting conference calls.

The dates that have been chosen for March and April ST meetings are:

1. March 3, 2014, 1:00pm to 2:30pm, PST (Monday)
2. April 2, 2014, 10:30am to 12:00pm, PST (Wednesday)

The calendar invite for each of these meetings will be sent momentarily.

We look forward to meeting with you all in the coming months.

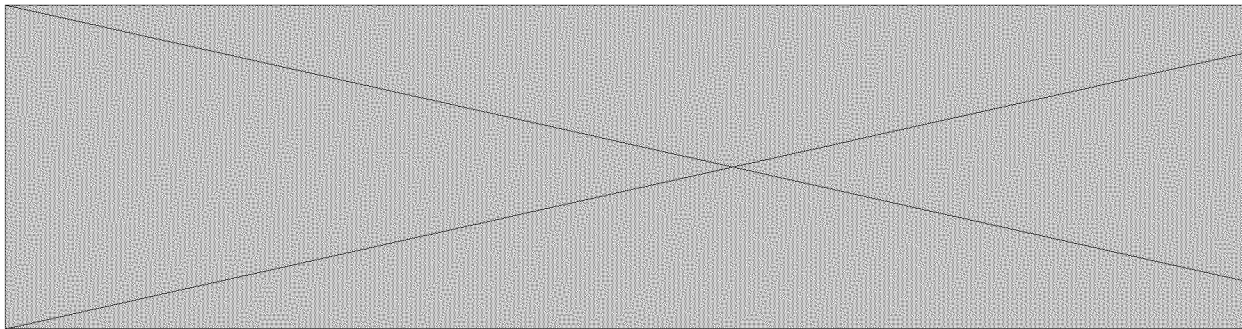
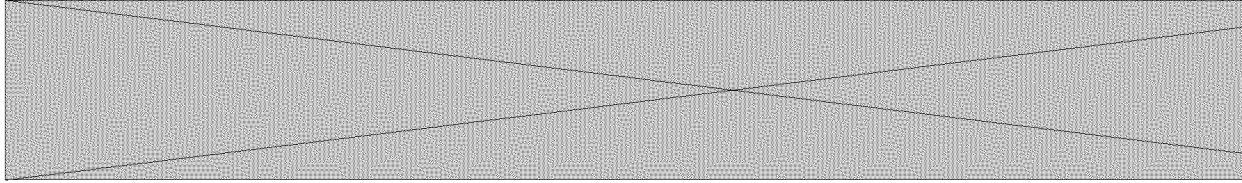
Thank you,

**Linda Carrizosa** | Administrative Assistant | CaFCP

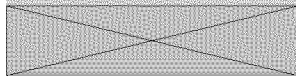
D 916 371 2870 | F 916 375 8005 | [lcarrizosa@cafcp.org](mailto:lcarrizosa@cafcp.org)

3300 Industrial Blvd., Ste. 1000, West Sacramento, CA 95691 | [www.cafcp.com](http://www.cafcp.com)

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** The Hill  
**Sent:** Fri 2/14/2014 12:19:59 PM  
**Subject:** The Hill's E-news: February 14, 2014



February 14, 2014



## **The Hill: McConnell's bring-it-on moment**

By Alexander Bolton

In perhaps his most defining moment in the 113th Congress, McConnell strode up to the dais and declared his “aye” vote in a clear voice heard throughout the chamber.

## **The Hill: Obama shifts to foreign policy**

By Justin Sink

The packed schedule includes trips to the Middle East, Europe, and Asia.

## **The Hill: White House to launch administration-wide drought response**

By Laura Barron-Lopez

California is currently experiencing one of the state's worst droughts in more than 100 years.

## **The Hill: House Dems seek to force GOP's hand on minimum wage hike**

By Mike Lillis

House Democrats are launching an effort to force Republicans' hand on the minimum wage.

## **The Hill: Franken 'concerned' about Comcast deal**

By Ramsey Cox

Sen. Al Franken (D-Minn.) urged federal regulators Thursday to critically look at Comcast's proposed \$45.2 billion purchase of Time Warner Cable.

## **The Hill: Landrieu's gavel comes with risks**

By Alexandra Jaffe and Laura Barron-Lopez

Sen. Mary Landrieu's (D-La.) new powers as chairman of the Energy and Natural Resources Committee could end up being a double-edged sword for her already-difficult reelection chances.

### **The Hill: Israel says 2014 is Dems' year**

By Mike Lillis

According to Democratic Congressional Campaign Committee Chairman Steve Israel (D-N.Y.), 2014 is his party's year.

### **The Hill: GOP's Doc Hastings to retire**

By Laura Barron-Lopez

House Natural Resources Committee Chairman Rep. Doc Hastings (R-Wash.) plans to retire at the end of the year.

### **The Hill: WH: Don't tax Olympians on medals**

By Justin Sink

The White House said Thursday that President Obama still believes American Olympians

shouldn't have to pay income taxes on the medals they win.

### **The Hill: Comcast, Time Warner execs have been big Obama supporters**

By Justin Sink

Executives at Comcast and Time Warner, which on Thursday announced a \$45.2 billion merger that will set off an antitrust fight in Washington, have showered President Obama and congressional Democrats with campaign contributions.

### **The Hill: GOP hits Obama on Medicare Advantage**

By Russell Berman

House Republican leaders on Thursday wrote to President Obama voicing their “deep concern” over expected cuts to the Medicare Advantage program that they blame on the president’s healthcare law.

### **The Hill: GOP lawmaker demands Obama**



## **release text of Iran nuclear deal**

By Pete Kasperowicz

Rep. Ileana Ros-Lehtinen (R-Fla.) this week called on President Obama to release the text of the Iran nuclear agreement.

## **Associated Press: Obama to hold more than 18 Dem fundraisers in 2014**

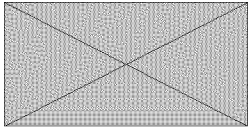
By Josh Lederman

The stepped-up commitment from the president stands in clear contrast to 2010, when Democrats complained Obama did too little to boost the party.

## **Reuters: ObamaCare enrollment push for the young enters 11th hour**

By David Morgan

Several top insurers have expressed unease about the mix of enrollment so far, and Republican opponents of the law see weak youth participation as the start of a downward spiral.



## **Feds target truck drivers who fail drug, alcohol tests**

By Tim Devaney

The Obama administration is moving forward with regulations it says would improve traffic safety by keeping dangerous truck and bus drivers off the road.

## **Biden to visit Latin America in March**

By Justin Sink

Vice President Biden and second lady Jill Biden will travel to Chile and the Dominican Republic in March, the White House announced Thursday.

## **Karzai: US 'harassing' Afghanistan over detainee release**

By Jeremy Herb

Afghan President Hamid Karzai said Thursday that the United States must “respect Afghanistan’s sovereignty” as the country released 65 detainees despite vocal U.S. objections.

### **Tennessee Volkswagen workers voting on unionizing**

By Keith Laing

Workers at a Volkswagen plant in Chattanooga, Tenn., are voting this week on the possibility of joining the United Auto Workers (UAW) union.

### **Dems demand Fed does more to prevent credit fraud**

By Ramsey Cox

Sens. Dick Durbin (D-Ill.) and Al Franken (D-Minn.) asked the Federal Reserve to do more to prevent credit card fraud.

## **Stores, banks team up to fight hackers**

By Julian Hattem

The retail and financial industries are laying down their swords to come together on a new initiative to combat cyber crime.

## **Opinion: Judges could use legislative experience**

By Dakota S. Rudesill

A recent report by the Alliance for Justice is right to urge greater diversity in the professional background of judicial nominees.

## **Perception of Russia, Putin hits new low**

By Mario Trujillo

The perception in the United States of Russia and its president is at an all-time low, according to a new survey.

## **Obama encourages Latinos to enroll ‘amigos,**

## **familia and vecinos' in ObamaCare**

By Justin Sink

The White House on Thursday released a video featuring President Obama encouraging Hispanics to sign up for ObamaCare.

## **Utilities turn to coal as cold blast spikes natural gas prices**

By Laura Barron-Lopez

The drawn out arctic blast has the U.S. turning to coal.

## **Scarborough mercurial on 2016 ambitions**

By Rebecca Shabad

Joe Scarborough can't seem to give a straight answer about his possible presidential ambitions.

## **Wyden: GOP leaders to blame for tax reform gridlock**

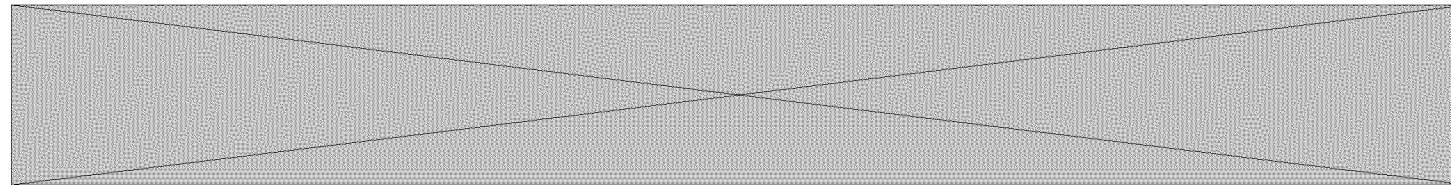
By Bernie Becker

The Senate's new top tax writer says that extending dozens of expired tax breaks will be one of his top priorities, while blaming House Republicans for blocking progress on broader tax reform.

## **US launches new effort against infectious disease**

By Elise Viebeck

Federal health officials are spearheading a new global effort to fight infectious diseases, particularly in countries that are ill equipped to address rising threats.



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**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Kata, Leonard (EEO)[Leonard.Kata@vw.com]  
**From:** Rodgers, William (EEO)  
**Sent:** Fri 2/14/2014 1:20:37 PM  
**Subject:** FW: VW driver trace request. VID FAPA-AAF  
[2-20131009-04.xlsx](#)  
[2-20131009-02.xlsx](#)  
[2-20131011-03.xlsx](#)

Hello Jim,

As agreed, in exchange for EPA drive trace files you provided I have attached are the Audi A3 (VID: FAPA-AAF) drive traces conducted at our Audi factory in Ingolstadt, Germany.

Regards

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)



Test Facility Audi Ingolstadt  
Model A3 1.8TFSI  
Vehicle ID FAPA-AAF  
Test # 2-20131009-04  
Test Type US06

Time s	VSCHED mph	VROLL mph
0	0	0
1	0.076	0
2	0.076	0
3	0.076	0
4	0.076	0
5	0.152	0
6	0.076	0
7	0.076	0
8	0.152	0
9	0.076	0
10	0.228	0
11	0.152	0
12	0.531	0.081
13	0.797	1.734
14	1.517	4.567
15	3.035	10.7
16	11.608	17.063
17	16.616	20.792
18	24.658	23.426
19	25.379	26.602
20	25.72	29.516
21	30.842	31.952
22	33.004	34.033
23	35.963	36.301
24	37.253	38.582
25	39.605	39.943
26	41.009	41.279
27	42.526	42.752
28	44.043	43.46
29	43.93	43.59
30	42.83	43.019
31	41.729	41.099
32	39.453	40.247
33	38.77	39.607
34	38.391	39.141
35	38.846	38.681
36	39.036	38.234
37	38.77	37.644
38	37.86	35.748
39	33.156	32.71
40	30.121	29.292
41	26.631	24.967
42	19.309	19.22
43	15.705	13.142
44	7.511	8.022
45	3.983	3.057
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47	0.114	0
48	0.076	0
49	0.038	0
50	0.076	0
51	0.076	0
52	0.076	0.348
53	0.038	2.063
54	0.379	5.611

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56	12.671	17.231
57	15.971	19.729
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59	24.203	28.186
60	30.576	31.939
61	32.701	35.562
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65	45.675	45.933
66	46.851	48.04
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69	51.631	52.911
70	53.907	54.539
71	54.817	56.111
72	57.7	57.603
73	58.269	57.876
74	56.6	57.348
75	56.031	56.596
76	55.728	55.838
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78	54.362	54.738
79	54.362	54.253
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83	52.276	52.7
84	51.934	52.569
85	51.896	52.532
86	51.896	52.874
87	51.934	53.52
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89	52.996	54.962
90	53.717	55.888
91	56.031	57.037
92	57.359	58.205
93	59.901	59.498
94	61.19	60.853
95	63.77	62.226
96	65.288	63.748
97	66.501	65.351
98	68.778	66.942
99	69.764	68.427
100	70.599	69.341
101	70.599	69.384
102	70.409	68.595
103	69.233	67.501
104	67.867	66.408
105	65.553	65.339
106	64.529	64.289
107	62.935	63.257
108	61.911	62.257
109	59.635	60.691
110	58.459	58.653
111	57.359	57.255

112	55.083	55.906
113	54.021	54.359
114	51.744	52.29
115	50.568	50.556
116	48.292	48.99
117	47.306	47.35
118	45.864	45.057
119	42.223	42.609
120	40.326	40.191
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122	37.405	37.072
123	35.698	34.686
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152	48.71	48.53
153	49.658	49.394
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156	52.541	51.942
157	52.807	52.75
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160	53.907	55.061
161	54.324	55.813
162	55.235	56.546
163	56.752	57.168
164	57.397	57.87
165	58.345	58.584
166	58.914	59.262
167	59.825	59.802
168	60.128	60.181

169	60.318	60.436
170	59.976	60.343
171	59.218	59.672
172	58.156	58.839
173	58.004	58.156
174	57.7	57.677
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177	56.866	56.845
178	56.904	56.584
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183	56.486	55.272
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201	62.215	61.524
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203	62.632	62.319
204	62.556	62.655
205	62.329	62.953
206	62.708	63.201
207	62.784	63.363
208	62.708	63.518
209	62.86	63.674
210	63.618	63.916
211	64.036	64.171
212	64.074	64.432
213	64.225	64.68
214	64.491	64.979
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218	66.008	66.035
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220	65.667	64.469
221	63.694	64.084
222	63.732	63.997
223	63.922	64.034
224	63.884	64.084
225	63.884	64.133

226	64.225	64.152
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248	63.618	63.86
249	63.087	63.767
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252	63.125	63.475
253	63.277	63.388
254	63.315	63.295
255	63.011	63.208
256	62.556	63.121
257	62.746	63.027
258	62.86	62.953
259	62.404	62.847
260	62.177	62.742
261	62.366	62.642
262	62.253	62.549
263	62.366	62.474
264	62.329	62.412
265	62.215	62.363
266	62.632	62.331
267	62.67	62.307
268	62.253	62.282
269	62.329	62.257
270	61.949	62.251
271	62.291	62.257
272	62.784	62.276
273	62.518	62.288
274	62.404	62.294
275	62.518	62.307
276	62.253	62.313
277	61.949	62.319
278	61.797	62.331
279	61.835	62.35
280	62.101	62.363
281	62.063	62.363
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283	62.177	62.394
284	62.253	62.418
285	62.329	62.642
286	62.366	62.897
287	62.556	63.121
288	62.67	63.369
289	63.353	63.686
290	64.074	63.978
291	64.605	64.289
292	64.946	64.649
293	65.25	65.047
294	66.008	65.451
295	66.35	65.942
296	67.26	66.47
297	67.298	66.979
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299	68.284	68.272
300	68.398	68.943
301	68.929	69.583
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304	71.699	71.988
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306	73.823	72.522
307	72.647	72.559
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310	72.381	72.87
311	72.495	72.671
312	72.685	72.473
313	72.268	72.429
314	71.774	72.379
315	71.205	72.212
316	71.054	71.919
317	71.054	71.627
318	70.902	71.621
319	71.016	71.87
320	71.054	72.286
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336	79.286	79.556
337	79.513	79.879
338	79.893	80.085
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342	79.513	79.563
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352	65.97	67.011
353	66.008	66.426
354	65.932	66.19
355	66.046	66.109
356	66.198	66.501
357	66.653	66.936
358	67.146	67.358
359	67.981	67.713
360	68.322	67.98
361	68.626	68.129
362	68.436	67.992
363	68.171	67.669
364	68.019	67.371
365	67.715	67.097
366	66.729	66.88
367	66.312	66.743
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384	69.992	69.589
385	70.674	69.819
386	70.712	69.968
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388	70.371	70.08
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428	70.599	70.975
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432	69.802	69.67
433	69.233	69.372
434	68.474	69.086
435	68.171	68.806
436	68.171	68.539
437	68.019	68.272
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446	66.35	66.116
447	66.274	65.898
448	66.16	65.675
449	65.932	64.829
450	65.743	63.966
451	64.339	63.22
452	62.215	62.493
453	61.949	62.027



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456	61.494	61.872
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460	61.797	61.915
461	61.797	61.921
462	61.797	61.996
463	61.911	62.145
464	61.797	62.269
465	61.949	62.338
466	62.518	62.331
467	62.404	62.307
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478	57.549	57.242
479	56.448	56.354
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481	52.958	52.11
482	51.327	50.457
483	49.051	49.574
484	48.444	47.598
485	45.94	44.454
486	43.74	41.869
487	38.391	38.57
488	36.115	34.984
489	34.446	32.623
490	31.031	29.031
491	27.617	24.706
492	19.347	20.114
493	17.45	16.896
494	14.947	14.205
495	12.291	11.036
496	9.522	7.245
497	3.869	3.206
498	1.555	0
499	0.076	0.093
500	0.076	0
501	0.076	0
502	0.076	0
503	0.076	0
504	0	0.068
505	0.152	1.094
506	0.19	3.536
507	1.669	8.718
508	8.725	14.646
509	12.595	19.903
510	16.312	22.985

511	23.141	25.688
512	25.834	27.068
513	28.072	27.235
514	27.769	26.713
515	25.417	24.334
516	23.748	20.263
517	21.737	15.982
518	14.036	11.539
519	10.356	9.706
520	7.36	9.806
521	8.801	12.919
522	14.34	17.461
523	17.45	20.959
524	20.523	24.129
525	25.834	26.943
526	27.617	28.161
527	28.452	27.639
528	27.39	24.29
529	22.799	19.847
530	19.802	15.149
531	16.616	10.626
532	9.636	7.301
533	7.663	4.878
534	4.438	3.113
535	1.897	2.995
536	1.783	4.312
537	3.566	8.743
538	6.601	14.547
539	14.491	20.344
540	17.982	24.191
541	24.393	26.521
542	26.593	26.906
543	27.997	27.043
544	27.655	26.322
545	26.783	23.557
546	22.079	19.331
547	19.006	14.366
548	11.457	9.501
549	8.27	5.555
550	3.794	5.474
551	2.769	6.991
552	3.262	11.359
553	11.153	16.777
554	14.529	21.214
555	20.637	24.961
556	23.596	27.931
557	29.059	28.696
558	29.969	28.118
559	29.286	26.303
560	23.52	22.438
561	20.751	18.051
562	13.884	12.894
563	9.749	7.68
564	3.718	2.15
565	1.517	0.155
566	0	0
567	0	0

568	0.076	0
569	0.076	0
570	0.076	0
571	0.076	0.093
572	0.076	1.33
573	0.038	4.853
574	3.642	11.657
575	7.967	18.679
576	16.919	23.986
577	20.827	26.235
578	27.162	31.25
579	31.183	35.158
580	35.242	38.483
581	38.884	41.353
582	41.388	44.672
583	48.103	47.797
584	50.568	50.332
585	51.403	50.55
586	51.024	49.81
587	50.682	49.009
588	48.747	46.89
589	47.04	43.348
590	42.45	40.633
591	39.946	37.283
592	34.522	33.331
593	31.069	28.938
594	27.466	24.408
595	21.092	19.723
596	17.375	14.833
597	8.687	10.066
598	5.008	5.089
599	0.683	0.242
600	0.114	0
601	0.076	0
602	0.114	0
603	0.076	0
604	0.076	0
605	0.076	0
606	0.228	0
607	0.076	0
608	0.076	0
609	0.076	0
610	0.076	0
611	0.076	0
612	0.076	0
613	0.076	0
614	0.076	0
615	0.076	0
616	0.228	0
617	0.076	0
618	0.076	0
619	0.076	0
620	0.228	0
621	0.076	0
622	0.076	0
623	0.076	0
624	0.076	0

625	0.076	0
626	0.076	0
627	0.076	0
628	0.114	0
629	0.076	0
630	0.19	0
631	0.228	0
632	0.076	0
633	0.228	0
634	0.076	0
635	0.076	0
636	0.076	0
637	0.076	0
638	0.076	0
639	0.114	0
640	0.076	0
641	0.076	0
642	0.076	0
643	0	0
644	0.076	0
645	0.076	0
646	0.076	0
647	0.076	0
648	0.076	0
649	0.076	0
650	0.076	0
651	0.076	0
652	0.076	0
653	0.076	0
654	0.076	0
655	0.076	0
656	0.19	0
657	0.076	0
658	0.076	0
659	0.228	0
660	0.038	0
661	0.076	0
662	0.076	0
663	0.076	0
664	0.076	0
665	0.076	0
666	0.076	0
667	0.076	0
668	0.038	0
669	0.076	0
670	0	0
671	0.076	0
672	0.076	0
673	0.038	0
674	0.228	0
675	0.076	0
676	0.076	0
677	0.076	0
678	0.076	0
679	0.076	0
680	0.076	0
681	0.076	0

682	0.076	0
683	0	0
684	0.114	0
685	0.076	0
686	0.152	0
687	0.076	0
688	0.19	0
689	0.076	0
690	0.114	0
691	0.076	0
692	0.076	0
693	0	0
694	0.076	0
695	0	0
696	0.076	0
697	0.076	0
698	0.076	0
699	0.076	0
700	0.038	0
701	0.076	0
702	0.076	0
703	0.076	0
704	0.152	0
705	0.076	0
706	0.076	0
707	0.076	0
708	0.076	0
709	0.076	0
710	0.152	0
711	0.228	0
712	0.076	0
713	0.076	0
714	0.076	0
715	0.076	0
716	0.152	0
717	0.152	0
718	0.038	0
719	0	0
720	0.076	0
721	0.076	0
722	0.076	0
723	0.076	0
724	0.076	0
725	0.076	0
726	0.076	0
727	0.076	0
728	0.038	0
729	0.038	0
730	0.152	0.087
731	0.076	0.379
732	0.531	1.541
733	0.948	3.026
734	1.252	5.108
735	3.907	10.303
736	7.967	16.802
737	18.095	21.357
738	22.23	24.949

739	25.189	28.745
740	26.479	31.765
741	28.907	33.897
742	33.573	35.991
743	35.091	38.228
744	37.708	40.08
745	38.884	41.503
746	41.616	42.957
747	42.905	43.932
748	43.854	44.019
749	43.74	43.354
750	43.285	42.484
751	41.16	41.751
752	39.946	40.614
753	38.619	39.893
754	38.429	39.172
755	38.505	38.464
756	38.96	37.756
757	38.77	37.035
758	37.405	36.196
759	35.129	34.412
760	28.983	31.436
761	25.417	27.086
762	21.699	21.457
763	14.34	16.311
764	10.243	11.576
765	2.883	5.872
766	0.835	1
767	0.076	0
768	0.076	0
769	0.076	0
770	0.076	0
771	0.076	0
772	0.038	0.068
773	0.076	1.485
774	0.645	5.592
775	4.401	12.167
776	9.901	19.984
777	16.881	22.507
778	19.12	26.26
779	25.379	29.398
780	28.604	32.697
781	33.156	35.854
782	35.28	38.588
783	37.708	41.788
784	42.488	44.908
785	44.499	47.331
786	47.078	49.015
787	48.254	50.506
788	50.758	52.209
789	51.934	53.862
790	53.148	55.434
791	55.121	56.776
792	56.335	57.528
793	58.269	57.391
794	57.624	56.869
795	55.955	56.832

796	55.576	56.329
797	54.969	55.701
798	54.286	55.372
799	54.286	55.167
800	54.324	54.719
801	54.021	54.197
802	52.693	53.961
803	52.2	53.421
804	52.086	53.011
805	51.782	52.998
806	51.858	53.352
807	51.934	53.731
808	52.238	54.347
809	53.148	55.08
810	53.983	56.192
811	55.083	57.391
812	57.852	58.671
813	59.142	59.945
814	61.57	61.201
815	62.822	62.462
816	65.629	63.848
817	66.805	65.184
818	67.981	66.613
819	69.916	68.011
820	70.371	69.285
821	70.674	69.627
822	70.599	68.794
823	68.853	67.775
824	67.564	66.762
825	66.35	65.774
826	64.301	64.792
827	63.467	63.835
828	61.646	62.872
829	60.432	61.294
830	58.156	59.436
831	56.942	57.901
832	55.728	56.627
833	53.679	54.682
834	52.541	52.688
835	50.189	51.134
836	49.051	49.543
837	46.851	47.735
838	45.485	44.933
839	43.74	42.714
840	39.795	40.9
841	38.581	38.98
842	37.101	37.805
843	36.342	36.165
844	31.79	32.511
845	27.807	27.148
846	23.9	22.488
847	17.754	18.107
848	14.643	13.304
849	8.118	8.861
850	5.387	5.866
851	2.504	3.679
852	1.821	1.79

853	1.062	0.336
854	0.076	0
855	0.076	0
856	0.076	0
857	0.076	0
858	0.076	0
859	0.076	0.597
860	0.076	2.057
861	1.404	5.617
862	4.097	12.888
863	13.391	20.73
864	17.982	25.937
865	27.238	27.733
866	31.373	33.685
867	34.635	38.228
868	40.933	41.857
869	43.436	44.348
870	46.168	46.349
871	47.154	47.984
872	49.051	49.469
873	49.81	50.364
874	50.417	51.004
875	51.896	51.706
876	52.389	52.402
877	52.807	53.085
878	53.3	53.75
879	53.869	54.415
880	53.869	55.055
881	53.869	55.701
882	55.424	56.316
883	56.448	56.944
884	57.7	57.572
885	58.156	58.199
886	59.18	58.827
887	59.787	59.417
888	59.939	59.927
889	60.356	60.225
890	60.356	60.293
891	58.952	59.622
892	58.231	59.057
893	57.89	58.529
894	57.624	58.174
895	57.359	57.976
896	57.055	57.777
897	56.752	57.572
898	56.79	57.323
899	56.6	57.106
900	56.297	56.901
901	56.373	56.714
902	56.448	56.534
903	56.486	56.341
904	56.335	56.118
905	56.107	55.757
906	55.879	55.241
907	55.235	54.757
908	54.628	54.421
909	54.286	54.415



910	53.414	54.956
911	52.845	55.639
912	55.348	56.397
913	56.031	57.18
914	57.7	57.839
915	58.004	58.448
916	58.269	59.044
917	59.635	59.641
918	60.242	60.237
919	61.19	60.809
920	61.57	61.337
921	62.329	61.822
922	62.556	62.226
923	62.67	62.58
924	62.48	62.922
925	62.329	63.177
926	62.86	63.388
927	62.86	63.599
928	62.784	63.798
929	62.935	64.015
930	63.125	64.208
931	63.998	64.401
932	63.922	64.606
933	64.225	64.823
934	64.453	65.059
935	64.794	65.314
936	65.098	65.569
937	65.439	65.811
938	66.008	65.979
939	66.046	65.463
940	64.984	65.034
941	63.922	64.811
942	63.77	64.612
943	63.922	64.407
944	63.998	64.214
945	64.074	64.009
946	64.301	63.897
947	64.036	63.86
948	63.922	63.823
949	63.694	63.804
950	63.656	63.779
951	64.036	63.761
952	63.96	63.736
953	64.036	63.73
954	63.922	63.711
955	63.77	63.779
956	63.391	64.015
957	63.618	64.276
958	63.922	64.519
959	64.187	64.711
960	64.377	64.786
961	64.984	64.699
962	64.794	64.5
963	64.187	64.332
964	63.846	64.152
965	63.163	64.028
966	63.391	63.891

967	63.163	63.792
968	63.618	63.667
969	63.429	63.556
970	63.163	63.45
971	63.049	63.419
972	63.011	63.444
973	63.315	63.469
974	63.391	63.475
975	62.822	63.4
976	62.556	63.282
977	62.86	63.158
978	62.86	63.04
979	62.708	62.922
980	62.518	62.816
981	62.48	62.692
982	62.291	62.574
983	62.329	62.505
984	62.215	62.481
985	62.329	62.443
986	62.708	62.431
987	62.556	62.412
988	62.253	62.369
989	62.366	62.363
990	62.253	62.363
991	62.518	62.325
992	62.822	62.325
993	62.708	62.307
994	62.518	62.294
995	62.708	62.288
996	62.253	62.263
997	62.063	62.269
998	61.797	62.251
999	61.911	62.244
1000	62.101	62.238
1001	62.101	62.22
1002	62.101	62.22
1003	62.253	62.269
1004	62.366	62.512
1005	62.177	62.804
1006	62.253	63.058
1007	62.404	63.338
1008	62.67	63.612
1009	62.822	63.922
1010	64.036	64.233
1011	64.377	64.575
1012	64.984	64.96
1013	65.363	65.358
1014	65.819	65.824
1015	66.577	66.308
1016	67.033	66.824
1017	67.412	67.34
1018	67.715	67.943
1019	68.284	68.57
1020	68.474	69.204
1021	68.778	69.869
1022	69.233	70.59
1023	69.916	71.348

1024	71.888	72.137
1025	72.837	72.833
1026	73.33	72.187
1027	72.419	72.224
1028	72.306	72.386
1029	72.268	72.566
1030	72.116	72.69
1031	72.837	72.671
1032	72.761	72.479
1033	72.078	72.249
1034	71.661	72.038
1035	71.509	71.864
1036	71.054	71.708
1037	71.054	71.547
1038	70.902	71.534
1039	70.978	71.789
1040	71.205	72.137
1041	71.509	72.553
1042	72.116	73.013
1043	73.102	73.659
1044	73.861	74.399
1045	75.303	75.176
1046	76.213	76.126
1047	77.958	77.133
1048	78.679	77.667
1049	79.172	77.618
1050	78.224	77.456
1051	77.541	77.437
1052	75.91	77.785
1053	76.63	78.195
1054	77.806	78.624
1055	78.375	79.065
1056	79.02	79.488
1057	79.779	79.83
1058	79.779	80.022
1059	80.082	80.109
1060	80.272	80.134
1061	79.703	80.14
1062	79.513	79.973
1063	79.362	79.531
1064	78.869	78.581
1065	78.451	77.599
1066	77.048	76.474
1067	75.872	75.331
1068	73.102	73.684
1069	71.926	71.18
1070	70.523	69.223
1071	67.033	68.172
1072	66.312	67.203
1073	66.046	66.557
1074	66.046	66.464
1075	66.122	66.594
1076	66.198	66.83
1077	66.198	67.073
1078	67.26	67.309
1079	67.564	67.532
1080	68.284	67.75

1081	68.398	67.961
1082	68.474	68.005
1083	68.171	67.912
1084	68.095	67.526
1085	67.564	67.166
1086	66.995	66.992
1087	66.274	66.855
1088	66.008	66.712
1089	65.894	66.582
1090	66.198	66.445
1091	66.35	66.476
1092	66.122	66.65
1093	66.426	66.905
1094	67.298	67.16
1095	67.677	67.427
1096	67.981	67.675
1097	68.247	67.974
1098	68.398	68.291
1099	68.891	68.595
1100	68.778	68.887
1101	69.385	69.185
1102	69.385	69.471
1103	69.84	69.751
1104	70.143	70.03
1105	70.561	70.298
1106	70.75	70.434
1107	70.826	70.515
1108	70.409	70.459
1109	70.447	70.254
1110	69.878	70.037
1111	69.764	69.863
1112	69.954	69.875
1113	69.84	69.881
1114	69.536	69.894
1115	69.764	69.9
1116	69.802	69.9
1117	69.65	69.912
1118	69.574	69.943
1119	69.954	70.018
1120	70.219	70.13
1121	70.143	70.273
1122	70.636	70.409
1123	70.94	70.528
1124	70.826	70.652
1125	70.75	70.77
1126	70.75	70.876
1127	71.016	70.987
1128	71.243	71.093
1129	71.016	71.217
1130	70.75	71.329
1131	71.547	71.447
1132	71.774	71.553
1133	71.926	71.658
1134	72.419	71.77
1135	72.268	71.87
1136	72.116	71.975
1137	72.116	72.069

1138	71.926	72.162
1139	72.23	72.261
1140	72.571	72.342
1141	72.988	72.305
1142	73.026	72.1
1143	71.737	71.851
1144	71.357	71.603
1145	70.561	71.366
1146	70.409	71.143
1147	70.447	70.925
1148	70.561	70.708
1149	70.371	70.49
1150	70.561	70.285
1151	70.219	70.086
1152	69.498	69.881
1153	68.967	69.689
1154	68.626	69.484
1155	68.209	69.279
1156	68.398	69.08
1157	67.867	68.862
1158	67.564	68.657
1159	67.45	68.458
1160	67.677	68.247
1161	67.526	68.03
1162	67.412	67.818
1163	67.108	67.613
1164	66.653	67.408
1165	66.35	67.191
1166	66.35	66.973
1167	66.312	66.756
1168	66.35	66.489
1169	66.008	65.762
1170	66.046	64.979
1171	63.694	64.071
1172	62.366	63.301
1173	61.759	62.592
1174	61.342	62.319
1175	61.115	62.145
1176	61.266	62.021
1177	61.19	61.977
1178	61.418	62.232
1179	61.494	62.425
1180	61.797	62.605
1181	61.835	62.748
1182	61.797	62.816
1183	61.987	62.779
1184	62.329	62.673
1185	62.063	62.561
1186	62.329	62.45
1187	62.329	62.344
1188	62.404	62.251
1189	62.556	62.151
1190	62.404	62.07
1191	62.708	61.971
1192	62.822	61.884
1193	62.86	61.803
1194	62.366	61.356

1195	61.873	60.449
1196	61.001	59.548
1197	59.18	58.653
1198	58.535	57.764
1199	56.183	56.186
1200	55.272	54.645
1201	52.389	52.688
1202	50.796	51.016
1203	49.279	49.792
1204	48.292	47.971
1205	47.192	46.635
1206	43.057	43.677
1207	40.477	39.626
1208	35.584	35.487
1209	34.218	33.207
1210	32.814	29.727
1211	26.138	24.781
1212	21.585	19.406
1213	17.337	17.548
1214	16.578	15.336
1215	11.457	11.875
1216	8.611	8.706
1217	5.766	5.437
1218	1.138	1.69
1219	0.076	0.137
1220	0.076	0
1221	0.228	0
1222	0.076	0
1223	0	0
1224	0.114	0
1225	0.076	0.721
1226	0	3.312
1227	2.58	9.327
1228	5.956	14.677
1229	13.809	19.133
1230	17.526	22.01
1231	21.13	25.129
1232	26.403	27.248
1233	27.845	27.366
1234	27.466	26.577
1235	26.327	24.358
1236	23.293	21.071
1237	20.523	16.827
1238	16.768	11.738
1239	9.332	10.359
1240	7.056	10.017
1241	9.484	12.931
1242	12.291	16.958
1243	18.437	21.338
1244	21.472	25.11
1245	24.355	27.652
1246	27.807	27.956
1247	28.528	27.161
1248	26.783	24.035
1249	24.658	20.114
1250	18.854	16.33
1251	15.516	12.44

1252	11.798	9.998
1253	7.701	7.805
1254	7.056	4.946
1255	1.745	2.995
1256	1.442	3.374
1257	4.476	6.947
1258	7.929	12.328
1259	12.177	18.573
1260	19.082	22.681
1261	22.458	25.85
1262	27.086	26.72
1263	27.845	26.459
1264	27.39	25.52
1265	26.176	24.172
1266	24.317	20.413
1267	18.133	15.665
1268	14.34	10.7
1269	7.511	5.909
1270	5.235	5.437
1271	2.656	6.22
1272	4.628	9.967
1273	8.801	14.951
1274	15.516	19.723
1275	18.551	23.687
1276	24.507	27.602
1277	27.238	28.565
1278	29.78	27.31
1279	28.452	25.626
1280	25.834	21.811
1281	19.954	16.976
1282	17.223	11.663
1283	8.877	7.314
1284	5.652	4.107
1285	0.986	1.404
1286	0.076	0.124
1287	0.076	0
1288	0.076	0
1289	0.076	0
1290	0.038	0
1291	0.076	0
1292	0.076	0.882
1293	0.114	4.3
1294	0.683	10.539
1295	9.294	16.56
1296	13.733	22.805
1297	21.851	25.496
1298	24.962	29.671
1299	32.701	34.431
1300	35.887	37.818
1301	37.708	40.222
1302	42.488	43.174
1303	45.788	46.48
1304	50.948	49.699
1305	51.517	50.898
1306	50.872	50.513
1307	50.417	49.518
1308	49.772	46.697

1309	46.32	44.435
1310	44.043	42.348
1311	39.301	39.576
1312	36.798	36.109
1313	29.818	31.368
1314	26.479	26.328
1315	23.444	21.028
1316	16.237	15.653
1317	11.912	10.533
1318	4.021	5.462
1319	1.669	0.634
1320	0.076	0
1321	0.19	0
1322	0.076	0
1323	0.038	0
1324	0.076	0
1325	0.076	0
1326	0.076	0
1327	0.076	0
1328	0.076	0
1329	0.076	0
1330	0.076	0
1331	0.076	0
1332	0.076	0
1333	0.228	0
1334	0	0
1335	0.076	0
1336	0.076	0
1337	0.076	0
1338	0.076	0
1339	0.076	0
1340	0.076	0
1341	0.076	0
1342	0	0
1343	0.076	0
1344	0.076	0
1345	0.038	0
1346	0.076	0
1347	0.038	0
1348	0.076	0
1349	0	0
1350	0.076	0



Test Facility	Audi Ingolstadt	Time	VSCHED	VROLL
Model	A3 1.8TFSI	s	mph	mph
Vehicle ID	FAPA-AAF	0	0	0
Test #	2-20131009-02	1	0	0
Test Type	FTP75	2	0	0
		3	0	0
		4	0	0
		5	0	0
		6	0	0
		7	0	0
		8	0	0
		9	0	0
		10	0	0
		11	0	0
		12	0	0
		13	0	0
		14	0	0
		15	0	0
		16	0	0
		17	0	0
		18	0	0
		19	0	0
		20	0	0
		21	0	0
		22	0	0
		23	0	0
		24	0	0.224
		25	0	0.603
		26	2.983	2.411
		27	5.903	5.145
		28	8.575	8.302
		29	11.496	10.694
		30	14.292	12.944
		31	16.902	15.417
		32	17.275	17.591
		33	18.082	19.052
		34	20.692	21.028
		35	21.686	21.817
		36	22.37	22.078
		37	22.494	22.37
		38	22.121	21.599
		39	21.5	21.245
		40	20.879	20.655
		41	20.382	19.592
		42	19.822	18.598
		43	17.026	16.771
		44	14.913	15.379
		45	14.913	15.137
		46	15.224	15.895
		47	15.473	16.703
		48	15.97	16.908
		49	17.088	17.84
		50	19.077	19.151
		51	21.065	20.742
		52	22.681	22.258
		53	22.867	22.743
		54	22.681	22.532

55	22.619	21.519
56	21.314	20.425
57	19.014	19.307
58	17.088	17.206
59	15.783	16.442
60	15.783	16.61
61	17.71	17.995
62	19.822	19.779
63	21.624	21.78
64	23.178	23.283
65	24.172	23.973
66	24.607	24.402
67	24.918	24.284
68	24.98	24.234
69	24.607	24.508
70	24.483	24.725
71	24.669	24.65
72	24.793	24.725
73	24.669	24.949
74	24.607	25.191
75	24.607	25.44
76	25.104	25.626
77	25.601	25.502
78	25.725	25.222
79	25.415	25.054
80	24.918	24.992
81	24.98	25.085
82	25.415	25.365
83	25.974	25.645
84	25.974	25.893
85	25.725	26.136
86	26.098	26.496
87	26.72	26.968
88	27.465	27.459
89	28.584	27.994
90	29.267	28.534
91	29.764	29.075
92	30.075	29.541
93	30.386	29.932
94	30.697	30.218
95	30.697	30.311
96	30.51	30.299
97	30.386	30.28
98	30.324	30.38
99	30.386	30.479
100	30.821	30.361
101	30.386	30.001
102	29.889	29.758
103	29.516	29.851
104	29.764	30.069
105	30.324	30.249
106	30.697	30.386
107	30.883	30.523
108	31.007	30.653
109	30.883	30.641
110	30.386	30.38
111	29.764	30.193

112	29.889	30.318
113	30.199	30.423
114	30.697	30.616
115	31.194	30.889
116	31.815	31.194
117	32.188	31.504
118	32.374	31.859
119	32.188	31.567
120	31.691	30.703
121	28.584	28.795
122	25.29	25.781
123	21.997	22.768
124	18.704	19.574
125	15.41	16.461
126	12.117	13.024
127	8.824	9.545
128	5.468	6.873
129	2.175	3.349
130	0	0
131	0	0.087
132	0	0
133	0	0
134	0	0
135	0	0
136	0	0
137	0	0
138	0	0
139	0	0
140	0	0
141	0	0
142	0	0
143	0	0
144	0	0
145	0	0
146	0	0
147	0	0
148	0	0
149	0	0
150	0	0
151	0	0
152	0	0
153	0	0
154	0	0
155	0	0
156	0	0
157	0	0
158	0	0
159	0	0
160	0	0
161	0	0
162	0	0
163	0	0
164	0	0
165	0	0
166	0	0
167	0	0.304
168	0	1.752

169	3.293	3.822
170	6.587	6.444
171	9.88	9.886
172	13.173	12.658
173	16.467	16.224
174	19.822	19.294
175	22.184	21.798
176	24.296	24.334
177	25.788	26.067
178	26.409	26.042
179	25.725	25.365
180	25.104	25.005
181	24.669	24.75
182	24.98	24.98
183	25.166	25.427
184	25.415	25.887
185	25.788	26.328
186	27.217	26.633
187	26.471	25.974
188	23.986	24.943
189	22.681	22.351
190	19.387	19.561
191	17.71	17.846
192	17.212	17.598
193	18.082	18.611
194	18.58	20.127
195	20.009	22.022
196	22.184	23.986
197	24.483	25.986
198	27.279	27.484
199	30.51	29.013
200	33.493	30.759
201	36.165	32.989
202	37.283	35.748
203	39.272	38.333
204	40.515	40.278
205	42.068	41.279
206	43.497	42.385
207	45.113	43.659
208	45.983	44.964
209	46.791	46.144
210	47.474	46.828
211	47.474	47.269
212	47.288	47.586
213	47.163	47.642
214	46.977	47.306
215	46.977	47.033
216	46.977	46.989
217	46.977	46.983
218	46.977	47.12
219	47.163	47.449
220	47.412	47.884
221	47.909	48.294
222	48.468	48.648
223	49.09	48.99
224	49.462	49.363
225	50.022	49.792

226	50.581	50.208
227	51.016	50.699
228	51.513	51.14
229	52.197	51.581
230	53.191	52.023
231	54.061	52.588
232	54.62	53.272
233	54.869	53.862
234	54.993	54.247
235	54.869	54.589
236	54.62	54.925
237	54.62	55.26
238	54.806	55.614
239	55.117	55.925
240	55.49	56.142
241	55.676	56.292
242	56.111	56.428
243	56.298	56.54
244	56.608	56.683
245	56.671	56.77
246	56.671	56.714
247	56.484	56.577
248	56.484	56.434
249	56.484	56.36
250	56.484	56.279
251	56.484	56.205
252	56.484	56.124
253	56.36	55.993
254	56.111	55.683
255	55.801	55.03
256	55.117	54.49
257	54.62	54.204
258	54.185	54.067
259	53.999	53.955
260	53.688	53.899
261	53.564	53.924
262	53.874	53.986
263	53.999	54.055
264	54.061	54.005
265	54.061	53.818
266	53.812	53.477
267	53.377	53.16
268	53.004	52.861
269	52.569	52.551
270	52.072	52.246
271	52.383	51.954
272	52.01	51.706
273	51.886	51.557
274	51.699	51.501
275	51.513	51.526
276	51.575	51.656
277	51.762	52.103
278	52.072	52.532
279	52.507	52.93
280	53.004	53.328
281	53.502	53.719
282	53.999	54.098

283	54.869	54.452
284	55.366	54.8
285	55.614	55.154
286	55.987	55.49
287	55.987	55.645
288	55.801	55.185
289	55.179	54.477
290	54.496	53.943
291	53.564	53.446
292	52.507	52.961
293	51.513	52.489
294	51.513	52.016
295	51.513	51.55
296	51.078	51.091
297	50.084	50.755
298	50.022	50.581
299	50.084	50.388
300	50.022	50.202
301	49.587	50.003
302	49.462	49.817
303	49.462	49.574
304	49.462	49.301
305	49.09	48.959
306	48.593	48.17
307	48.095	47.306
308	47.163	46.474
309	46.107	45.629
310	44.989	44.802
311	43.808	43.988
312	42.565	43.174
313	41.509	42.298
314	40.266	40.993
315	38.464	39.116
316	36.973	37.55
317	35.171	35.91
318	33.804	34.574
319	32.499	33.306
320	31.504	31.964
321	30.572	31.051
322	30.51	30.069
323	30.013	29.106
324	29.019	28.18
325	27.465	27.217
326	24.793	25.62
327	21.5	22.96
328	20.071	20.618
329	19.077	19.735
330	18.517	18.865
331	17.026	18.002
332	15.473	16.013
333	12.49	13.341
334	10.812	10.607
335	8.016	7.892
336	4.723	5.325
337	1.429	2.79
338	0	0.323
339	0	0

340	0	0
341	0	0
342	0	0
343	0	0
344	0	0
345	0	0
346	0	0
347	0	0
348	0	0
349	0	0
350	0	0.112
351	0	0.895
352	0.994	2.728
353	4.288	5.22
354	7.581	9.203
355	10.874	11.639
356	14.168	14.193
357	17.275	16.846
358	20.009	18.94
359	22.494	21.227
360	23.675	23.625
361	25.166	25.533
362	26.595	26.85
363	28.087	28.118
364	30.013	29.485
365	30.821	30.678
366	31.567	31.796
367	32.064	32.766
368	32.809	33.443
369	33.617	33.946
370	34.487	34.276
371	34.611	34.357
372	34.922	34.444
373	34.798	34.568
374	34.487	34.779
375	34.673	35.133
376	35.481	35.525
377	35.978	35.792
378	35.978	35.954
379	35.978	36.103
380	35.978	36.239
381	35.978	36.357
382	35.978	36.438
383	36.103	36.507
384	36.413	36.55
385	36.475	36.513
386	36.413	36.152
387	35.978	35.425
388	35.108	34.661
389	34.114	33.891
390	33.493	33.12
391	31.38	31.89
392	29.019	29.348
393	25.725	26.459
394	22.991	23.644
395	20.319	20.761
396	17.523	17.84

397	14.478	15.025
398	11.993	12.129
399	8.699	9.383
400	5.406	6.338
401	2.113	2.504
402	0	0
403	0	0
404	0	0
405	0	0
406	0	0.199
407	0	1.752
408	2.61	4.288
409	5.903	7.668
410	9.197	10.334
411	12.49	12.627
412	15.783	15.454
413	19.077	18.753
414	22.37	21.444
415	24.98	24.042
416	25.601	26.266
417	27.465	27.832
418	29.019	29.348
419	30.013	30.231
420	30.075	30.025
421	30.013	29.733
422	29.702	29.305
423	29.267	28.54
424	28.77	27.677
425	28.025	26.819
426	24.98	25.11
427	21.686	22.016
428	18.393	18.872
429	15.1	15.734
430	11.806	12.216
431	8.513	8.65
432	5.22	5.853
433	1.926	3.188
434	0	0.249
435	0	0
436	0	0
437	0	0
438	0	0
439	0	0
440	0	0
441	0	0
442	0	0
443	0	0
444	0	0
445	0	0
446	0	0
447	0	0
448	0	0
449	0	0
450	0	0
451	0	0.249
452	0	2.057
453	3.293	4.841



454	6.587	8.563
455	9.88	11.179
456	13.173	14.168
457	16.467	17.256
458	19.822	19.617
459	23.116	22.339
460	26.409	25.104
461	27.776	27.198
462	29.081	29.013
463	31.504	30.771
464	32.996	32.381
465	33.617	33.748
466	34.798	34.63
467	35.108	35.258
468	35.606	35.612
469	36.103	35.724
470	35.978	35.854
471	36.103	35.954
472	36.165	35.904
473	35.978	35.761
474	35.668	35.649
475	35.978	35.537
476	35.978	35.438
477	35.606	35.345
478	35.481	35.245
479	35.419	35.152
480	35.171	35.071
481	35.171	35.009
482	35.171	34.966
483	35.171	34.922
484	35.171	34.891
485	35.171	34.897
486	34.984	34.922
487	35.108	34.941
488	35.171	34.959
489	35.481	34.99
490	35.171	35.009
491	34.984	35.028
492	34.984	35.053
493	34.984	35.077
494	34.798	35.04
495	34.611	34.524
496	34.487	33.791
497	33.493	33.058
498	32.001	32.337
499	30.075	30.926
500	28.025	28.36
501	25.477	25.757
502	22.494	23.072
503	19.822	20.375
504	16.467	17.393
505	13.173	14.006
506	10.315	10.893
507	7.208	7.786
508	3.977	4.654
509	0.994	1.647
510	0	0

511	0	0
512	0	0
513	0	0
514	0	0.168
515	0	1.572
516	1.181	3.449
517	3.48	4.89
518	5.468	6.413
519	6.525	7.544
520	8.513	8.383
521	9.569	9.29
522	10.501	10.881
523	11.869	12.409
524	13.981	14.193
525	15.97	16.224
526	17.71	17.921
527	19.014	19.481
528	20.071	21.158
529	21.003	22.239
530	21.997	22.569
531	22.991	22.904
532	23.799	23.37
533	24.483	23.824
534	24.918	24.203
535	24.98	24.445
536	24.98	24.601
537	24.98	24.806
538	24.98	24.93
539	24.98	24.998
540	24.98	25.123
541	25.601	25.409
542	25.788	25.626
543	25.974	25.458
544	25.601	25.272
545	25.166	25.172
546	24.98	25.073
547	24.98	24.943
548	24.98	24.296
549	24.421	23.532
550	23.116	22.718
551	19.822	20.145
552	16.467	17.082
553	13.173	14.472
554	9.88	10.377
555	6.587	7.239
556	3.293	3.884
557	0	0.193
558	0	0
559	0	0
560	0	0
561	0	0
562	0	0
563	0	0
564	0	0
565	0	0
566	0	0
567	0	0

568	0	0
569	0	0
570	0	0
571	0	0
572	0	0.155
573	0	1.951
574	3.293	4.517
575	6.587	7.55
576	9.88	9.812
577	12.987	11.639
578	14.603	13.528
579	15.97	15.715
580	17.026	16.821
581	17.026	16.877
582	17.026	17.132
583	17.523	17.38
584	17.71	17.536
585	17.71	17.616
586	17.523	17.511
587	17.026	17.343
588	16.902	17.206
589	16.591	17.076
590	17.026	16.945
591	17.088	16.821
592	17.026	16.69
593	16.591	16.616
594	16.467	16.535
595	16.467	16.616
596	16.591	16.877
597	17.026	17.287
598	17.585	17.952
599	18.517	18.778
600	19.201	19.673
601	20.195	20.4
602	21.003	20.897
603	21.065	21.22
604	21.189	21.307
605	21.624	21.519
606	21.997	21.761
607	22.37	22.01
608	22.494	22.252
609	22.494	22.6
610	22.494	23.078
611	22.681	23.731
612	23.675	24.595
613	25.104	25.284
614	25.974	25.757
615	26.471	26.142
616	26.968	26.067
617	26.098	25.309
618	22.805	23.426
619	19.512	20.493
620	16.218	17.287
621	12.925	13.745
622	9.569	10.365
623	6.276	6.916
624	2.983	3.48

625	0	0.155
626	0	0
627	0	0
628	0	0
629	0	0
630	0	0
631	0	0
632	0	0
633	0	0
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643	0	0
644	0	0
645	0	0
646	0	0
647	0	0
648	0	0
649	0	0.124
650	0	1.64
651	1.988	3.772
652	4.474	6.257
653	7.829	8.581
654	10.191	9.979
655	12.49	11.489
656	13.981	13.845
657	15.286	16.659
658	17.523	18.592
659	19.574	20.599
660	21.003	22.351
661	22.184	23.557
662	23.302	24.414
663	24.483	24.669
664	25.29	24.737
665	25.601	24.967
666	25.974	25.359
667	26.098	25.75
668	26.223	26.111
669	26.223	26.384
670	26.409	26.508
671	26.471	26.452
672	26.471	26.167
673	25.974	25.471
674	25.477	24.7
675	23.613	23.917
676	21.376	21.823
677	18.517	19.244
678	16.405	16.684
679	14.478	14.168
680	11.62	11.738
681	8.699	9.339

682	5.779	6.382
683	3.48	3.399
684	1.988	2.026
685	0	0
686	0	0
687	0	0
688	0	0
689	0	0
690	0	0
691	0	0
692	0	0
693	0	0
694	0	0
695	0	0
696	0	0
697	0	0.13
698	0	0.938
699	1.429	2.492
700	3.293	4.493
701	4.412	6.817
702	6.525	8.557
703	9.197	9.619
704	11.309	11.278
705	13.484	12.925
706	14.603	14.714
707	16.405	16.193
708	16.715	16.088
709	16.467	16.274
710	16.467	16.585
711	18.207	17.275
712	19.201	18.244
713	20.071	19.586
714	21.5	21.003
715	22.494	22.022
716	22.494	22.177
717	22.121	22.774
718	22.681	23.227
719	23.302	23.178
720	23.488	22.799
721	22.494	21.867
722	21.624	20.941
723	20.506	19.568
724	18.02	16.871
725	14.975	13.907
726	11.993	12.024
727	9.01	10.551
728	6.214	8.153
729	4.474	5.729
730	2.983	4.002
731	2.113	2.436
732	0.497	0.839
733	0.497	1.143
734	3.169	3.871
735	6.525	6.984
736	9.569	10.054
737	12.49	12.813
738	13.981	15.305

739	15.97	17.56
740	18.02	19.195
741	19.574	21.04
742	21.5	22.737
743	23.116	23.973
744	24.483	24.781
745	25.477	25.117
746	26.471	25.545
747	27.093	26.042
748	27.59	26.539
749	27.9	27.055
750	28.273	27.577
751	28.584	28.012
752	28.584	28.124
753	28.273	28.112
754	28.211	28.093
755	28.025	27.701
756	27.465	26.987
757	26.782	26.21
758	25.477	25.446
759	23.488	23.868
760	21.5	21.481
761	19.014	19.934
762	16.467	17.473
763	14.913	15.336
764	12.49	12.564
765	9.383	9.433
766	6.214	6.27
767	2.983	3.076
768	1.491	1.808
769	1.491	1.261
770	0.497	0.416
771	0	0.435
772	2.983	1.79
773	6.276	4.263
774	9.569	7.09
775	12.925	11.322
776	15.783	14.888
777	17.523	17.194
778	18.393	18.722
779	19.512	20.543
780	20.692	22.507
781	21.997	24.271
782	23.178	25.433
783	24.98	25.85
784	26.471	26.285
785	27.465	26.838
786	28.025	27.409
787	28.273	27.962
788	28.895	28.441
789	28.895	28.54
790	28.895	28.36
791	28.77	28.217
792	28.522	28.124
793	28.273	28.037
794	28.273	27.969
795	28.273	27.9

796	28.211	27.813
797	27.59	27.67
798	27.465	27.521
799	27.465	27.385
800	27.465	27.291
801	27.465	27.229
802	27.465	27.31
803	27.465	27.838
804	27.59	28.404
805	28.025	28.938
806	28.522	29.64
807	30.013	30.249
808	31.007	31.007
809	32.001	31.585
810	32.996	32.219
811	32.996	32.753
812	33.617	33.263
813	33.99	33.698
814	34.301	34.071
815	34.176	33.76
816	33.99	33.555
817	33.99	33.331
818	33.866	33.12
819	33.617	32.909
820	33.12	32.704
821	32.996	32.505
822	32.499	32.318
823	32.001	32.088
824	31.877	31.809
825	31.567	31.579
826	31.504	31.337
827	30.572	31.094
828	30.013	30.864
829	29.889	30.647
830	29.889	30.436
831	29.889	30.231
832	29.889	29.889
833	29.578	29.659
834	29.516	29.516
835	29.516	29.373
836	29.267	29.243
837	28.895	29
838	28.211	28.46
839	27.714	27.757
840	26.968	26.993
841	25.477	26.055
842	23.675	23.843
843	21.997	22.476
844	20.506	20.419
845	19.201	19.263
846	19.201	18.996
847	20.071	19.797
848	20.879	20.587
849	21.376	21.314
850	21.997	22.103
851	22.619	22.848
852	23.178	23.6

853	23.986	24.358
854	24.98	24.961
855	25.974	25.123
856	26.595	25.315
857	26.595	25.738
858	26.782	26.179
859	26.968	26.626
860	27.217	27.086
861	27.776	27.552
862	28.087	28.018
863	28.77	28.472
864	28.895	28.888
865	29.019	29.124
866	29.081	29.044
867	29.019	28.689
868	28.087	28.267
869	27.465	27.621
870	26.968	26.856
871	25.788	26.098
872	24.98	25.346
873	24.483	24.7
874	24.793	24.421
875	25.104	24.489
876	25.477	25.185
877	25.725	26.024
878	26.223	26.838
879	26.906	27.447
880	27.465	27.981
881	27.776	28.435
882	28.397	28.59
883	29.019	28.764
884	29.205	28.895
885	29.081	28.789
886	29.019	28.615
887	28.895	28.441
888	28.522	28.279
889	28.087	28.012
890	28.025	27.695
891	28.025	27.378
892	27.59	27.074
893	27.217	26.919
894	26.595	26.869
895	26.968	27.012
896	27.465	27.161
897	27.776	27.279
898	28.025	27.378
899	27.776	27.472
900	28.025	27.552
901	28.025	27.652
902	28.025	27.577
903	27.714	27.403
904	27.403	27.254
905	26.906	27.093
906	26.595	26.925
907	26.471	26.763
908	26.471	26.602
909	26.471	26.44



910	26.285	26.297
911	26.223	26.154
912	26.223	26.018
913	25.912	25.881
914	25.601	25.738
915	25.601	25.601
916	25.912	25.464
917	25.788	25.272
918	25.477	24.619
919	24.607	23.88
920	23.488	23.147
921	22.184	22.426
922	21.624	21.941
923	21.624	21.773
924	21.686	21.829
925	22.619	22.14
926	23.426	22.519
927	23.93	22.967
928	24.153	23.464
929	24.396	23.967
930	24.868	24.458
931	25.085	24.918
932	25.16	25.272
933	25.278	25.204
934	25.458	24.998
935	25.197	24.849
936	24.998	24.713
937	24.98	24.582
938	24.98	24.445
939	24.7	24.327
940	24.501	24.265
941	24.315	24.377
942	24.296	24.514
943	24.464	24.626
944	24.93	24.731
945	24.98	24.812
946	24.644	24.775
947	24.607	24.65
948	24.16	24.563
949	24.445	24.57
950	25.042	24.669
951	25.551	24.998
952	25.154	24.613
953	24.097	23.892
954	22.196	22.774
955	20.263	19.928
956	17.219	16.653
957	13.938	13.621
958	10.644	11.079
959	7.351	7.792
960	4.058	4.039
961	0.708	0.621
962	0.037	0
963	0	0.112
964	0	0.783
965	1.79	3.281
966	4.673	6.462

967	8.215	9.377
968	11.539	11.104
969	14.888	12.807
970	17.293	15.081
971	18.474	17.529
972	19.866	19.269
973	20.959	21.27
974	21.904	23.103
975	22.892	24.824
976	24.334	25.645
977	26.105	26.31
978	27.347	26.925
979	28.025	27.559
980	28.366	28.168
981	28.509	28.435
982	28.522	28.261
983	28.522	28.068
984	27.795	27.851
985	27.49	27.614
986	27.242	27.354
987	26.825	26.962
988	26.502	26.378
989	26.024	25.8
990	25.75	25.253
991	25.222	24.607
992	24.104	23.855
993	22.196	23.116
994	21.55	22.382
995	21.5	21.86
996	21.78	21.836
997	22.426	21.966
998	22.942	22.152
999	22.824	22.351
1000	22.805	22.513
1001	22.973	22.662
1002	22.712	22.799
1003	22.681	22.942
1004	22.681	23.097
1005	23.408	23.346
1006	23.936	23.731
1007	24.545	24.259
1008	24.775	24.868
1009	25.073	25.253
1010	25.44	25.054
1011	25.589	25.03
1012	25.489	24.955
1013	25.03	24.595
1014	24.197	24.247
1015	23.718	23.911
1016	23.227	23.569
1017	22.898	23.109
1018	22.532	22.662
1019	22.047	22.022
1020	21.662	21.289
1021	20.618	20.481
1022	17.821	17.753
1023	14.503	13.925

1024	11.204	10.98
1025	7.91	8.24
1026	4.617	5.108
1027	1.324	2.374
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1058	1.063	3.063
1059	3.697	5.4
1060	6.941	8.221
1061	10.29	10.011
1062	13.59	12.018
1063	16.715	15.094
1064	18.368	17.759
1065	19.86	19.592
1066	21.631	21.593
1067	22.873	23.196
1068	23.886	24.29
1069	24.713	24.775
1070	25.52	24.918
1071	26.384	25.409
1072	26.751	26.185
1073	27.341	27.03
1074	27.851	27.795
1075	28.236	28.068
1076	28.049	27.919
1077	27.521	27.739
1078	27.018	27.254
1079	26.968	26.477
1080	26.353	25.719

1081	24.663	24.967
1082	22.693	23.992
1083	21.599	22.19
1084	20.661	20.102
1085	18.275	18.014
1086	15.28	16.075
1087	12.571	14.217
1088	11.241	12.316
1089	10.675	11.465
1090	10.066	10.949
1091	9.557	10.334
1092	9.116	9.6
1093	8.737	9.11
1094	8.588	8.762
1095	8.799	8.532
1096	8.991	8.389
1097	8.731	8.271
1098	8.588	8.153
1099	8.072	7.823
1100	7.121	6.96
1101	5.176	4.865
1102	4.3	3.598
1103	2.771	2.473
1104	1.156	1.504
1105	0.099	0.435
1106	0.112	0.317
1107	0.572	1.187
1108	1.516	2.827
1109	3.405	4.691
1110	6.568	7.177
1111	9.694	9.184
1112	12.521	10.688
1113	13.863	12.316
1114	14.429	14.348
1115	15.821	16.585
1116	17.871	18.287
1117	19.816	19.822
1118	20.903	20.779
1119	21.171	21.283
1120	21.301	21.432
1121	21.37	21.848
1122	21.655	22.221
1123	22.413	22.637
1124	22.942	23.14
1125	23.718	23.7
1126	24.414	24.321
1127	24.93	24.365
1128	24.924	24.514
1129	24.806	25.092
1130	24.961	25.322
1131	25.371	25.44
1132	25.75	25.645
1133	25.955	25.868
1134	26.366	26.105
1135	26.577	26.334
1136	26.875	26.564
1137	26.962	26.738

1138	26.968	26.894
1139	26.968	26.981
1140	26.912	26.993
1141	26.794	26.962
1142	26.782	26.856
1143	26.502	26.608
1144	26.415	26.316
1145	26.018	25.688
1146	25.527	24.911
1147	24.694	24.122
1148	23.6	23.389
1149	21.699	22.662
1150	20.158	21.022
1151	17.772	18.573
1152	16.125	16.374
1153	14.18	14.913
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1156	4.43	5.462
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1175	5.077	6.674
1176	8.37	9.495
1177	11.663	11.744
1178	14.957	15.106
1179	18.25	17.939
1180	20.817	20.245
1181	22.799	22.544
1182	23.439	23.159
1183	23.041	22.233
1184	22.544	21.258
1185	20.257	19.356
1186	17.045	16.044
1187	13.751	13.285
1188	10.458	10.974
1189	7.109	7.73
1190	3.809	3.859
1191	0.516	1.317
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1200	0	0
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1202	0.168	1.224
1203	1.361	3.039
1204	3.281	4.971
1205	6.22	7.345
1206	9.489	9.153
1207	11.775	10.557
1208	12.832	11.918
1209	12.981	12.683
1210	12.651	12.906
1211	12.782	13.211
1212	13.08	13.621
1213	13.111	14.335
1214	13.894	15.466
1215	15.323	16.641
1216	16.871	17.473
1217	18.424	18.312
1218	19.586	19.226
1219	20.872	20.239
1220	21.45	21.164
1221	21.78	21.382
1222	21.811	21.45
1223	21.531	21.587
1224	21.22	21.631
1225	21.469	21.686
1226	21.78	21.742
1227	21.978	21.736
1228	21.885	21.631
1229	21.705	21.519
1230	21.519	21.326
1231	21.5	21.034
1232	21.388	20.761
1233	20.201	20.487
1234	19.568	20.226
1235	19.232	20.071
1236	19.536	20.077
1237	19.797	20.065
1238	19.99	19.673
1239	19.561	18.797
1240	17.722	17.908
1241	15.678	16.007
1242	13.236	13.372
1243	10.303	11.129
1244	8.215	9.097
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1256	0	0
1257	0.895	0.149
1258	0.994	0.379
1259	0.994	0.938
1260	0.994	1.373
1261	0.994	1.901
1262	1.553	2.952
1263	2.846	3.989
1264	3.877	4.443
1265	4.872	5.387
1266	6.146	6.686
1267	7.842	7.631
1268	9.806	8.718
1269	10.452	9.899
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1272	7.674	8.513
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1278	20.854	21.345
1279	21.73	22.264
1280	22.146	23.047
1281	22.911	23.544
1282	23.551	23.743
1283	24.06	23.849
1284	24.445	23.992
1285	24.483	23.843
1286	24.035	23.613
1287	23.538	23.457
1288	23.488	23.314
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1290	23.488	23.488
1291	23.488	23.93
1292	23.488	23.694
1293	23.936	23.892
1294	24.097	24.048
1295	24.445	24.215
1296	24.65	24.365
1297	24.949	24.57
1298	25.371	25.023
1299	25.583	25.359
1300	25.713	25.645
1301	25.949	25.986
1302	26.198	26.502
1303	26.894	27.086
1304	27.695	27.701
1305	28.223	28.335
1306	28.944	28.944
1307	29.075	29.019
1308	29.025	28.764

1309	28.124	27.944
1310	25.005	25.458
1311	21.705	22.42
1312	18.412	19.362
1313	15.118	16.274
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1317	1.945	2.722
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1342	0	1.013
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1344	4.455	4.499
1345	7.749	7.221
1346	11.042	9.812
1347	12.993	11.844
1348	14.907	14.006
1349	16.61	16.374
1350	18.567	18.008
1351	19.437	19.58
1352	20.239	21.028
1353	21.214	21.562
1354	21.817	21.606
1355	22.097	21.929
1356	22.345	22.059
1357	22.034	22.053
1358	21.662	21.91
1359	21.121	21.133
1360	20.562	20.239
1361	20.058	19.704
1362	19.617	19.126
1363	18.623	18.244
1364	17.623	17.362
1365	16.572	16.492



1366	15.572	15.622
1367	14.13	13.894
1368	11.297	11.713
1369	8.314	9.395
1370	5.499	6.065
1371	2.759	3.039
1372	0.249	0.373
1373	0	0
1374	0	0
1375	0	0
1376	0	0
1377	0	0
1378	0	0
1379	0	0
1380	0	0
1381	0	0
1382	0	0
1383	0	0
1384	0	0
1385	0	0
1386	0	0
1387	0	0
1388	0	0
1389	0	0
1390	0	0
1391	0	0
1392	0	0
1393	0	0
1394	0	0
1395	0	0
1396	0	0.13
1397	0	1.628
1398	2.983	3.84
1399	5.903	7.662
1400	8.575	10.501
1401	11.496	12.39
1402	14.292	14.578
1403	16.902	16.827
1404	17.275	17.908
1405	18.082	18.592
1406	20.692	19.94
1407	21.686	21.494
1408	22.37	22.289
1409	22.494	21.935
1410	22.121	21.73
1411	21.5	21.363
1412	20.879	20.73
1413	20.382	19.766
1414	19.822	18.71
1415	17.026	16.647
1416	14.913	15.361
1417	14.913	15.1
1418	15.224	15.522
1419	15.473	15.932
1420	15.97	16.603
1421	17.088	17.859
1422	19.077	19.58

1423	21.127	21.612
1424	22.681	22.376
1425	22.929	22.687
1426	22.681	22.184
1427	22.619	21.444
1428	21.314	20.512
1429	19.014	19.139
1430	17.088	16.796
1431	15.783	16.019
1432	15.783	16.989
1433	17.71	18.418
1434	19.822	20.344
1435	21.624	22.258
1436	23.178	23.352
1437	24.172	23.314
1438	24.607	23.737
1439	24.918	24.458
1440	24.98	24.595
1441	24.607	24.476
1442	24.483	24.377
1443	24.731	24.278
1444	24.793	24.247
1445	24.731	24.271
1446	24.607	24.433
1447	24.607	24.694
1448	25.104	24.998
1449	25.601	25.272
1450	25.725	25.402
1451	25.415	25.253
1452	24.918	25.098
1453	24.98	25.266
1454	25.415	25.539
1455	25.974	25.85
1456	25.974	26.111
1457	25.725	26.31
1458	26.098	26.608
1459	26.72	27.061
1460	27.527	27.689
1461	28.584	28.416
1462	29.33	29.156
1463	29.827	29.721
1464	30.075	29.938
1465	30.386	30.119
1466	30.697	30.305
1467	30.697	30.405
1468	30.51	30.411
1469	30.386	30.417
1470	30.324	30.429
1471	30.386	30.423
1472	30.821	30.386
1473	30.386	30.15
1474	29.889	29.827
1475	29.516	29.851
1476	29.827	30.106
1477	30.324	30.342
1478	30.697	30.56
1479	30.883	30.641

1480	31.007	30.61
1481	30.883	30.361
1482	30.386	30.088
1483	29.827	30.33
1484	29.889	30.56
1485	30.199	30.784
1486	30.697	31.007
1487	31.194	31.225
1488	31.815	31.591
1489	32.188	31.921
1490	32.374	32.045
1491	32.188	31.299
1492	31.691	30.492
1493	28.584	28.646
1494	25.29	25.899
1495	21.997	23.128
1496	18.704	20.301
1497	15.41	16.883
1498	12.117	13.279
1499	8.824	9.868
1500	5.53	6.382
1501	2.175	2.858
1502	0	0
1503	0	0.081
1504	0	0
1505	0	0
1506	0	0
1507	0	0
1508	0	0
1509	0	0
1510	0	0
1511	0	0
1512	0	0
1513	0	0
1514	0	0
1515	0	0
1516	0	0
1517	0	0
1518	0	0
1519	0	0
1520	0	0
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1522	0	0
1523	0	0
1524	0	0
1525	0	0
1526	0	0
1527	0	0
1528	0	0
1529	0	0
1530	0	0
1531	0	0
1532	0	0
1533	0	0
1534	0	0
1535	0	0
1536	0	0

1537	0	0
1538	0	0
1539	0	0.106
1540	0	1.715
1541	3.293	3.952
1542	6.587	7.264
1543	9.88	10.153
1544	13.173	12.428
1545	16.529	15.137
1546	19.822	18.2
1547	22.184	20.568
1548	24.296	23.01
1549	25.788	25.085
1550	26.409	25.595
1551	25.725	25.092
1552	25.104	24.955
1553	24.731	24.93
1554	24.98	25.005
1555	25.228	25.284
1556	25.415	25.694
1557	25.788	26.279
1558	27.217	26.732
1559	26.471	26.229
1560	23.986	25.259
1561	22.681	22.532
1562	19.387	19.717
1563	17.71	18.399
1564	17.212	17.908
1565	18.082	18.561
1566	18.58	20.145
1567	20.009	21.966
1568	22.184	23.923
1569	24.483	25.931
1570	27.279	27.472
1571	30.51	29.044
1572	33.493	30.995
1573	36.227	33.369
1574	37.283	35.742
1575	39.272	37.675
1576	40.515	39.054
1577	42.13	40.614
1578	43.497	42.435
1579	45.113	44.268
1580	45.983	45.902
1581	46.791	46.554
1582	47.474	46.902
1583	47.474	47.157
1584	47.288	47.089
1585	47.226	47.008
1586	46.977	46.865
1587	46.977	46.735
1588	46.977	46.66
1589	46.977	46.617
1590	46.977	46.797
1591	47.226	47.188
1592	47.412	47.605
1593	47.909	48.083

1594	48.53	48.561
1595	49.09	49.034
1596	49.525	49.5
1597	50.022	49.885
1598	50.581	50.289
1599	51.016	50.861
1600	51.513	51.513
1601	52.197	52.172
1602	53.191	52.83
1603	54.123	53.47
1604	54.62	54.11
1605	54.931	54.483
1606	54.993	54.508
1607	54.931	54.539
1608	54.62	54.595
1609	54.62	54.657
1610	54.806	54.862
1611	55.117	55.185
1612	55.49	55.54
1613	55.676	55.782
1614	56.111	55.987
1615	56.298	56.173
1616	56.608	56.347
1617	56.671	56.385
1618	56.671	56.416
1619	56.484	56.447
1620	56.484	56.459
1621	56.484	56.472
1622	56.484	56.478
1623	56.484	56.478
1624	56.484	56.453
1625	56.422	56.124
1626	56.111	55.683
1627	55.801	55.235
1628	55.117	54.831
1629	54.62	54.483
1630	54.185	54.185
1631	53.999	53.999
1632	53.688	53.924
1633	53.626	53.905
1634	53.874	53.936
1635	53.999	53.968
1636	54.123	53.986
1637	54.123	53.837
1638	53.812	53.328
1639	53.377	52.924
1640	53.004	52.569
1641	52.632	52.427
1642	52.072	52.352
1643	52.383	52.246
1644	52.01	52.116
1645	51.886	51.985
1646	51.699	51.855
1647	51.513	51.749
1648	51.575	51.737
1649	51.824	52.016
1650	52.072	52.482

1651	52.507	52.973
1652	53.004	53.452
1653	53.502	53.905
1654	53.999	54.353
1655	54.931	54.763
1656	55.428	55.148
1657	55.614	55.509
1658	55.987	55.695
1659	55.987	55.745
1660	55.801	55.378
1661	55.179	54.9
1662	54.496	54.421
1663	53.626	53.949
1664	52.507	53.477
1665	51.513	52.917
1666	51.513	52.371
1667	51.513	51.849
1668	51.078	51.352
1669	50.084	50.879
1670	50.022	50.5
1671	50.084	50.252
1672	50.022	49.997
1673	49.587	49.742
1674	49.525	49.481
1675	49.525	49.214
1676	49.525	48.965
1677	49.09	48.611
1678	48.593	47.866
1679	48.095	47.114
1680	47.226	46.349
1681	46.107	45.604
1682	44.989	44.852
1683	43.808	44.119
1684	42.627	43.224
1685	41.509	42.155
1686	40.328	41.024
1687	38.526	39.179
1688	36.973	37.203
1689	35.171	36.289
1690	33.804	34.841
1691	32.499	33.344
1692	31.504	32.207
1693	30.572	31.312
1694	30.51	30.591
1695	30.013	29.628
1696	29.019	28.826
1697	27.527	27.391
1698	24.793	24.874
1699	21.5	22.389
1700	20.071	20.425
1701	19.077	19.673
1702	18.517	18.921
1703	17.026	17.846
1704	15.473	16.392
1705	12.49	13.845
1706	10.812	10.856
1707	8.016	8.327

1708	4.723	5.766
1709	1.429	2.889
1710	0	0
1711	0	0
1712	0	0
1713	0	0
1714	0	0
1715	0	0
1716	0	0
1717	0	0
1718	0	0
1719	0	0
1720	0	0
1721	0	0
1722	0	0
1723	0	0.727
1724	0.994	2.759
1725	4.288	5.568
1726	7.581	8.898
1727	10.874	11.061
1728	14.23	13.459
1729	17.275	16.175
1730	20.009	18.561
1731	22.494	20.903
1732	23.675	23.252
1733	25.228	25.16
1734	26.595	26.502
1735	28.087	27.726
1736	30.013	29.124
1737	30.821	30.467
1738	31.629	31.523
1739	32.126	32.393
1740	32.499	33.108
1741	33.617	33.636
1742	34.487	34.027
1743	34.611	34.319
1744	34.922	34.245
1745	34.798	34.17
1746	34.487	34.183
1747	34.673	34.493
1748	35.481	35.046
1749	35.978	35.63
1750	35.978	35.898
1751	35.978	35.972
1752	35.978	36.034
1753	35.978	36.115
1754	35.978	36.196
1755	36.103	36.277
1756	36.413	36.351
1757	36.475	36.345
1758	36.413	35.991
1759	35.978	35.289
1760	35.108	34.586
1761	34.114	33.891
1762	33.493	33.114
1763	31.38	31.355
1764	29.019	28.727

1765	25.725	26.179
1766	22.991	23.588
1767	20.319	20.984
1768	17.523	18.617
1769	14.478	15.199
1770	11.993	11.844
1771	8.699	8.824
1772	5.406	6.009
1773	2.113	3.2
1774	0	0.23
1775	0	0
1776	0	0
1777	0	0
1778	0	0.081
1779	0	1.684
1780	2.61	3.902
1781	5.903	6.935
1782	9.01	9.743
1783	12.49	12.117
1784	15.783	15.361
1785	19.077	18.586
1786	22.37	21.059
1787	24.98	23.575
1788	25.601	25.794
1789	27.527	27.335
1790	29.019	28.839
1791	30.013	30.162
1792	30.075	30.653
1793	30.013	30.144
1794	29.702	29.702
1795	29.33	29.193
1796	28.77	28.441
1797	28.025	27.664
1798	24.98	25.377
1799	21.686	22.575
1800	18.393	19.437
1801	15.1	16.187
1802	11.806	12.919
1803	8.513	9.787
1804	5.22	6.382
1805	1.926	2.921
1806	0	0
1807	0	0.068
1808	0	0
1809	0	0
1810	0	0
1811	0	0
1812	0	0
1813	0	0
1814	0	0
1815	0	0
1816	0	0
1817	0	0
1818	0	0
1819	0	0
1820	0	0
1821	0	0



1822	0	0
1823	0	0.087
1824	0	1.541
1825	3.293	4.083
1826	6.587	7.817
1827	9.88	10.856
1828	13.173	14.068
1829	16.529	17.691
1830	19.263	20.114
1831	23.116	22.681
1832	26.409	25.359
1833	27.776	27.229
1834	29.081	28.913
1835	31.504	30.659
1836	32.996	32.436
1837	33.617	33.891
1838	34.798	34.847
1839	35.108	35.612
1840	35.606	36.115
1841	36.103	36.208
1842	35.978	36.301
1843	36.103	36.339
1844	36.227	36.37
1845	35.978	36.246
1846	35.73	35.991
1847	35.978	35.767
1848	35.978	35.55
1849	35.606	35.326
1850	35.481	35.195
1851	35.419	35.152
1852	35.171	35.146
1853	35.171	35.121
1854	35.171	35.096
1855	35.171	35.059
1856	35.171	35.021
1857	35.171	34.978
1858	34.984	34.934
1859	35.108	34.91
1860	35.171	34.984
1861	35.481	35.053
1862	35.171	35.096
1863	34.984	35.14
1864	34.984	35.158
1865	34.984	35.108
1866	34.798	35.015
1867	34.611	34.773
1868	34.673	34.189
1869	33.493	33.176
1870	32.001	31.324
1871	30.075	29.379
1872	28.025	27.695
1873	25.477	25.931
1874	22.494	23.389
1875	19.822	20.45
1876	16.529	17.418
1877	13.173	13.869
1878	10.315	10.52

1879	7.208	8.035
1880	3.977	5.015
1881	0.994	1.839
1882	0	0.199
1883	0	0
1884	0	0
1885	0	0
1886	0	0
1887	0	0
1888	0	0
1889	0	0
1890	0	0

Test Facility	Audi Ingolstadt	Time	VSCHED	VROLL
Model	A3 1.8TFSI	s	mph	mph
Vehicle ID	FAPA-AAF	0	0	0
Test #	2-20131011-03	1	0.076	0
Test Type	Highway	2	0.076	0
		3	0.228	0
		4	0.076	0
		5	0.076	0
		6	0.076	0
		7	0.228	1.591
		8	0.607	5.151
		9	3.983	8.258
		10	6.108	10.682
		11	10.622	13.049
		12	12.822	16.069
		13	15.098	18.536
		14	18.589	20.854
		15	20.258	23.29
		16	23.293	25.34
		17	24.696	26.689
		18	26.783	27.851
		19	27.959	28.963
		20	28.869	30.025
		21	29.969	30.759
		22	30.273	31.374
		23	31.183	31.989
		24	31.752	32.598
		25	32.814	33.201
		26	33.27	33.785
		27	33.611	34.381
		28	34.332	34.698
		29	34.635	34.959
		30	35.015	35.152
		31	35.356	35.338
		32	35.849	35.407
		33	35.887	35.282
		34	35.698	35.059
		35	35.129	34.941
		36	34.825	34.947
		37	34.522	34.997
		38	34.597	35.189
		39	35.053	35.475
		40	35.394	35.867
		41	35.736	36.277
		42	36.153	36.656
		43	36.305	36.848
		44	36.646	37.022
		45	36.76	37.078
		46	37.025	37.147
		47	37.025	37.203
		48	36.949	37.252
		49	37.101	37.321
		50	37.025	37.426
		51	37.063	37.544
		52	36.949	37.843
		53	37.215	38.439
		54	37.405	39.147

55	37.784	39.781
56	38.922	40.235
57	39.491	40.639
58	40.402	41.186
59	40.933	41.832
60	41.919	42.484
61	42.488	43.124
62	42.981	43.491
63	43.664	43.646
64	43.93	43.771
65	44.423	44.007
66	44.537	44.286
67	44.802	44.641
68	44.916	45.007
69	44.954	45.405
70	45.257	45.747
71	45.485	46.032
72	45.864	46.306
73	46.206	46.517
74	46.433	46.679
75	46.623	46.815
76	46.851	46.94
77	46.927	47.058
78	47.002	47.182
79	47.154	47.263
80	47.23	47.306
81	47.192	47.275
82	47.23	47.238
83	47.04	47.157
84	46.889	47.083
85	46.927	47.014
86	46.927	46.952
87	47.078	46.878
88	46.927	46.803
89	47.04	46.716
90	47.04	46.641
91	47.23	46.554
92	46.927	46.474
93	46.889	46.387
94	46.737	46.306
95	46.32	46.387
96	46.168	46.585
97	46.168	46.871
98	46.433	47.176
99	46.585	47.455
100	46.927	47.692
101	47.116	47.872
102	47.534	48.027
103	47.761	48.158
104	47.951	48.307
105	48.33	48.493
106	48.52	48.648
107	48.899	48.804
108	49.165	48.996
109	49.127	49.164
110	49.127	49.239
111	49.127	49.214

112	49.051	49.17
113	49.013	49.127
114	49.051	49.083
115	49.165	49.034
116	49.354	48.996
117	49.354	48.965
118	49.468	48.928
119	49.506	48.897
120	49.43	48.847
121	49.165	48.686
122	49.013	48.394
123	48.558	48.095
124	48.444	47.99
125	48.292	47.965
126	47.799	47.934
127	47.42	47.897
128	47.306	47.866
129	47.344	47.834
130	47.685	47.797
131	47.761	47.772
132	47.837	47.747
133	47.837	47.723
134	47.837	47.698
135	47.989	47.679
136	47.837	47.654
137	47.913	47.636
138	47.951	47.611
139	47.951	47.07
140	47.534	46.3
141	46.927	45.43
142	44.157	43.46
143	42.45	41.484
144	39.908	40.614
145	39.339	39.881
146	39.264	39.495
147	38.96	39.576
148	38.998	39.819
149	39.301	40.266
150	39.757	40.744
151	40.705	41.26
152	41.426	41.801
153	42.147	42.341
154	43.436	42.894
155	43.778	43.435
156	44.195	43.92
157	44.309	44.392
158	44.537	44.821
159	44.612	45.194
160	44.726	45.566
161	44.954	45.927
162	45.257	46.287
163	45.826	46.536
164	46.016	46.772
165	46.623	46.933
166	46.889	47.033
167	46.889	47.139
168	47.002	47.275

169	47.192	47.418
170	47.761	47.555
171	47.913	47.667
172	47.951	47.716
173	47.913	47.692
174	47.837	47.486
175	47.609	47.294
176	47.078	47.083
177	46.433	46.884
178	46.13	46.592
179	45.675	46.25
180	45.561	45.921
181	45.409	45.548
182	45.333	45.013
183	45.219	44.386
184	44.195	43.708
185	43.74	42.963
186	42.45	42.23
187	41.767	41.782
188	41.426	42.031
189	41.767	42.254
190	42.26	42.484
191	43.247	42.708
192	43.588	42.888
193	43.588	43.006
194	43.399	43.068
195	43.171	43.143
196	42.981	43.255
197	43.209	43.404
198	43.664	43.603
199	43.968	43.82
200	44.461	44.038
201	44.65	44.206
202	44.726	44.056
203	44.499	43.876
204	44.309	43.833
205	43.588	43.764
206	43.285	43.684
207	43.209	43.59
208	43.133	43.491
209	43.095	43.392
210	42.905	43.298
211	42.981	43.236
212	43.247	43.18
213	43.55	43.131
214	43.892	42.696
215	43.702	42.056
216	43.361	41.447
217	41.919	40.981
218	41.16	40.782
219	40.212	40.825
220	39.946	40.993
221	40.212	41.335
222	40.705	41.77
223	41.122	42.217
224	42.374	42.658
225	42.792	43.099

226	43.133	43.541
227	43.285	43.994
228	43.702	44.46
229	44.157	44.933
230	44.271	45.399
231	44.916	45.852
232	45.182	46.262
233	45.637	46.617
234	46.13	46.909
235	46.775	47.083
236	47.04	47.232
237	47.306	47.387
238	47.23	47.505
239	47.23	47.605
240	47.23	47.66
241	47.23	47.692
242	47.23	47.71
243	47.078	47.692
244	47.002	47.623
245	47.078	47.555
246	46.927	47.499
247	46.775	47.443
248	46.889	47.424
249	46.965	47.412
250	47.078	47.412
251	47.23	47.399
252	47.609	47.393
253	47.837	47.387
254	47.913	47.399
255	47.913	47.48
256	47.913	47.642
257	47.875	47.866
258	47.951	48.095
259	48.141	48.332
260	48.178	48.549
261	48.254	48.748
262	48.216	48.947
263	48.558	49.139
264	48.937	49.301
265	49.127	49.4
266	49.165	49.413
267	49.051	49.382
268	49.127	49.282
269	49.051	49.09
270	48.861	48.878
271	48.406	48.611
272	48.103	48.338
273	47.496	48.002
274	47.382	47.636
275	46.775	47.319
276	46.471	47.027
277	46.016	46.735
278	46.016	46.443
279	45.675	46.157
280	45.523	45.865
281	45.371	45.573
282	45.106	45.256

283	44.916	44.933
284	44.499	44.578
285	44.309	43.926
286	44.006	43.18
287	43.095	42.441
288	42.602	41.708
289	40.781	40.353
290	39.719	39.154
291	37.708	38.278
292	36.722	36.91
293	35.584	35.55
294	34.332	34.68
295	33.915	33.81
296	32.777	32.909
297	32.245	31.865
298	30.956	30.846
299	30.121	29.721
300	29.514	29.069
301	28.604	30.156
302	28.679	30.982
303	29.211	32.548
304	30.159	33.978
305	32.852	35.053
306	34.37	36.096
307	35.849	37.14
308	38.315	38.29
309	39.339	39.514
310	40.705	40.645
311	41.236	41.608
312	42.26	42.515
313	42.526	43.168
314	42.867	43.516
315	43.436	43.789
316	43.854	44.05
317	44.612	44.324
318	44.802	44.603
319	45.106	44.889
320	45.257	45.187
321	45.371	45.498
322	45.561	45.827
323	45.788	46.163
324	45.94	46.523
325	46.244	46.946
326	46.737	47.387
327	46.851	47.89
328	47.078	48.412
329	47.989	49.028
330	48.406	49.624
331	49.468	50.14
332	49.886	50.624
333	50.834	51.184
334	51.251	51.811
335	51.706	52.34
336	52.769	52.837
337	53.262	53.433
338	54.172	54.017
339	54.665	54.601



340	55.576	55.086
341	55.955	55.546
342	56.41	55.993
343	56.904	56.497
344	56.98	57
345	57.093	57.447
346	57.245	57.777
347	57.7	58.094
348	57.852	58.386
349	58.004	58.653
350	58.156	58.858
351	58.459	58.957
352	58.763	59.051
353	58.763	59.15
354	59.066	59.225
355	59.028	59.237
356	58.952	59.2
357	58.763	59.1
358	58.725	58.97
359	58.421	58.833
360	58.231	58.671
361	58.004	58.46
362	58.004	58.28
363	57.966	58.181
364	57.624	58.094
365	57.473	57.982
366	57.245	57.857
367	57.055	57.733
368	56.942	57.621
369	56.942	57.497
370	56.828	57.385
371	56.866	57.286
372	57.017	57.211
373	56.904	57.168
374	56.942	57.13
375	56.942	57.099
376	56.942	57.062
377	56.942	57.031
378	56.942	57.006
379	56.942	56.975
380	56.904	56.944
381	56.942	56.901
382	56.904	56.845
383	56.79	56.795
384	56.714	56.739
385	56.335	56.677
386	56.145	56.627
387	55.993	56.633
388	55.955	56.702
389	55.879	56.795
390	56.145	56.876
391	56.373	56.956
392	56.752	57.031
393	56.904	57.093
394	57.093	57.149
395	57.397	57.186
396	57.359	57.186

397	57.245	57.193
398	57.169	57.18
399	57.055	57.093
400	56.79	57
401	56.41	56.932
402	56.183	56.95
403	56.145	57.087
404	56.448	57.236
405	56.714	57.379
406	57.245	57.509
407	57.624	57.634
408	57.814	57.733
409	58.004	57.814
410	58.004	57.901
411	57.966	57.976
412	58.004	58.044
413	58.004	58.106
414	57.966	58.156
415	57.814	58.205
416	57.776	58.237
417	57.7	58.255
418	57.7	58.268
419	57.966	58.311
420	57.738	58.429
421	57.966	58.603
422	58.269	58.79
423	58.459	58.988
424	58.914	59.169
425	59.18	59.349
426	59.521	59.517
427	59.939	59.597
428	59.976	59.554
429	59.825	59.504
430	59.673	59.454
431	59.369	59.398
432	59.218	59.349
433	59.104	59.299
434	59.18	59.256
435	58.952	59.206
436	58.763	59.162
437	58.573	59.119
438	58.459	59.075
439	58.421	59.038
440	58.383	58.995
441	58.307	58.951
442	58.307	58.908
443	58.08	58.858
444	58.042	58.814
445	57.852	58.777
446	57.852	58.734
447	57.814	58.696
448	57.814	58.665
449	57.814	58.634
450	57.928	58.591
451	58.004	58.553
452	58.004	58.516
453	58.118	58.479

454	58.118	58.448
455	58.118	58.417
456	58.08	58.392
457	58.004	58.361
458	58.004	58.342
459	58.156	58.311
460	57.966	58.286
461	58.08	58.261
462	58.004	58.243
463	57.966	58.212
464	57.814	58.193
465	57.852	58.181
466	58.042	58.162
467	58.08	58.15
468	58.08	58.112
469	58.231	58.106
470	58.421	58.087
471	58.307	58.069
472	58.231	58.05
473	58.231	57.994
474	58.004	57.708
475	57.966	57.46
476	57.662	57.211
477	57.397	56.981
478	56.942	56.745
479	56.828	56.509
480	56.183	56.298
481	55.993	56.111
482	55.804	55.987
483	55.538	55.881
484	55.348	55.763
485	55.083	55.67
486	54.969	55.565
487	54.893	55.459
488	54.893	55.372
489	54.817	55.272
490	55.007	55.192
491	54.931	55.092
492	54.817	55.018
493	54.931	54.968
494	54.931	54.949
495	54.931	54.937
496	54.931	54.918
497	54.931	54.912
498	54.969	54.906
499	55.045	54.9
500	55.083	54.893
501	54.969	54.887
502	54.931	54.875
503	54.931	54.862
504	54.817	54.831
505	54.741	54.8
506	54.741	54.775
507	54.514	54.751
508	54.324	54.713
509	54.21	54.67
510	54.286	54.626

511	54.058	54.589
512	54.096	54.539
513	54.096	54.483
514	54.058	54.44
515	53.983	54.384
516	53.983	54.34
517	53.907	54.297
518	53.907	54.272
519	53.907	54.266
520	53.907	54.303
521	53.907	54.39
522	54.058	54.477
523	54.058	54.583
524	54.134	54.695
525	54.59	54.782
526	54.665	54.875
527	54.969	54.962
528	54.969	55.061
529	55.083	55.148
530	55.121	55.248
531	55.197	55.328
532	55.272	55.422
533	55.348	55.509
534	55.538	55.596
535	55.576	55.689
536	55.728	55.77
537	55.728	55.863
538	55.879	55.931
539	55.955	56.006
540	56.031	56.086
541	56.107	56.149
542	55.993	56.205
543	55.955	56.236
544	55.955	56.254
545	55.955	56.273
546	55.955	56.292
547	55.955	56.31
548	55.917	56.323
549	55.879	56.329
550	55.993	56.329
551	55.955	56.31
552	55.955	56.279
553	55.879	56.248
554	55.879	56.205
555	55.728	56.124
556	55.728	56.012
557	55.386	55.838
558	55.272	55.639
559	55.083	55.428
560	54.969	55.179
561	54.969	54.98
562	54.893	54.763
563	54.514	54.545
564	54.21	54.316
565	54.172	54.079
566	54.058	53.899
567	53.565	53.7

568	53.3	53.514
569	53.148	53.34
570	52.996	53.147
571	52.655	52.942
572	52.503	52.762
573	52.389	52.582
574	52.086	52.414
575	51.934	52.24
576	52.048	52.066
577	51.896	51.911
578	51.896	51.737
579	52.01	51.581
580	52.086	51.42
581	51.896	51.258
582	52.048	51.109
583	51.669	50.954
584	51.631	50.805
585	51.137	50.643
586	50.834	50.326
587	50.568	50.016
588	49.961	49.916
589	49.658	49.668
590	48.899	49.177
591	48.52	49.015
592	48.065	48.878
593	48.141	48.742
594	47.837	48.636
595	47.951	48.692
596	48.027	48.81
597	48.596	48.916
598	48.823	48.984
599	49.051	49.021
600	49.127	49.015
601	49.051	49.003
602	49.013	48.909
603	48.937	48.816
604	48.596	48.704
605	48.406	48.611
606	47.989	48.549
607	47.799	48.487
608	47.989	48.456
609	47.723	48.468
610	47.685	48.543
611	48.103	48.636
612	48.406	48.748
613	49.051	48.717
614	49.051	48.294
615	48.899	47.934
616	48.444	47.716
617	47.685	47.431
618	46.471	47.101
619	46.13	47.045
620	46.016	47.3
621	46.092	47.679
622	46.168	48.151
623	47.344	48.63
624	47.989	49.164

625	49.354	49.705
626	49.923	50.202
627	51.251	50.668
628	51.631	51.165
629	52.2	51.675
630	52.693	52.166
631	52.996	52.638
632	53.717	53.098
633	53.907	53.551
634	54.324	53.918
635	54.514	54.297
636	54.893	54.626
637	55.159	54.782
638	55.272	54.838
639	55.083	54.291
640	54.779	53.464
641	53.755	52.644
642	53.11	51.824
643	52.238	49.991
644	49.127	48.189
645	47.913	47.399
646	46.395	46.915
647	46.13	46.958
648	45.978	47.107
649	46.13	47.437
650	46.32	47.89
651	47.154	48.381
652	47.647	48.885
653	48.558	49.382
654	48.975	49.86
655	49.961	50.326
656	50.341	50.78
657	50.72	51.289
658	51.327	51.737
659	51.706	51.892
660	52.351	51.923
661	52.351	51.917
662	51.782	51.855
663	51.327	51.737
664	51.024	51.606
665	50.948	51.569
666	51.024	51.569
667	51.251	51.606
668	51.403	51.699
669	51.782	51.836
670	52.086	51.998
671	52.238	52.184
672	52.617	52.364
673	52.693	52.501
674	52.503	52.582
675	52.389	52.632
676	52.2	52.65
677	52.238	52.675
678	52.503	52.688
679	52.541	52.656
680	52.541	52.557
681	52.541	52.408

682	52.313	52.203
683	51.744	51.948
684	51.365	51.681
685	51.024	51.227
686	50.265	50.78
687	49.961	50.494
688	49.81	50.339
689	49.658	50.37
690	49.506	50.444
691	49.468	50.475
692	49.506	50.494
693	49.81	50.55
694	49.999	50.724
695	50.417	50.991
696	50.72	51.308
697	51.479	51.662
698	51.744	51.992
699	51.934	52.302
700	52.048	52.613
701	52.162	52.905
702	52.655	53.197
703	52.996	53.495
704	53.565	53.794
705	54.021	54.123
706	54.172	54.477
707	54.59	54.788
708	54.779	55.061
709	55.197	55.322
710	55.576	55.596
711	55.917	55.863
712	55.993	56.142
713	55.993	56.416
714	56.41	56.689
715	56.524	56.956
716	56.79	57.217
717	56.904	57.478
718	57.093	57.739
719	57.397	57.994
720	57.7	58.243
721	58.383	58.485
722	58.763	58.504
723	59.066	58.454
724	59.066	58.404
725	58.763	58.348
726	58.573	58.299
727	58.383	58.187
728	57.852	57.976
729	57.549	57.69
730	57.093	57.335
731	56.942	56.969
732	56.6	56.596
733	56.41	56.242
734	56.145	55.9
735	54.969	55.546
736	54.514	55.167
737	53.907	54.713
738	53.452	54.241

739	52.845	53.775
740	52.693	53.272
741	52.389	52.681
742	51.593	51.898
743	51.1	51.097
744	49.923	50.308
745	49.165	49.525
746	47.837	48.742
747	47.268	47.437
748	46.737	46.132
749	44.954	44.591
750	43.74	42.584
751	40.515	39.558
752	38.163	35.668
753	33.611	33.468
754	31.297	30.523
755	29.059	27.689
756	25.645	26.036
757	23.824	22.587
758	20.182	20.077
759	18.816	17.884
760	15.781	15.789
761	13.998	13.316
762	12.064	10.365
763	8.384	7.631
764	6.563	5.748
765	4.059	4.281
766	2.959	2.231
767	1.1	1.013
768	0.531	0
769	0.076	0
770	0.076	0
771	0.076	0
772	0.076	0
773	0.152	0
774	0.114	0
775	0.076	0
776	0.038	0
777	0.076	0
778	0.038	0
779	0.076	0
780	0.076	0
781	0.076	0
782	0.076	0
783	0.076	0
784	0.076	0
785	0	0
786	0.076	0.087
787	0.038	1.69
788	1.404	4.201
789	3.149	7.724
790	5.159	10.408
791	9.636	12.981
792	11.912	16.094
793	16.085	18.772
794	17.944	21.084
795	21.13	23.488



796	22.799	25.471
797	24.051	26.695
798	26.403	27.832
799	27.352	29.044
800	29.324	30.144
801	29.931	30.877
802	30.425	31.461
803	31.031	31.989
804	31.449	32.505
805	32.549	33.014
806	33.004	33.549
807	33.839	34.083
808	34.142	34.493
809	34.901	34.624
810	34.977	34.754
811	35.242	34.928
812	35.887	35.108
813	35.887	35.22
814	35.546	35.326
815	35.129	35.394
816	34.635	35.388
817	34.522	35.307
818	34.522	35.369
819	34.939	35.55
820	35.242	35.786
821	35.925	36.034
822	36.115	36.27
823	36.418	36.488
824	36.57	36.699
825	36.722	36.898
826	36.912	37.084
827	37.025	37.178
828	37.063	37.215
829	37.025	37.265
830	37.063	37.327
831	36.949	37.457
832	37.063	37.756
833	37.139	38.104
834	37.367	38.545
835	38.239	39.098
836	38.77	39.682
837	39.757	40.285
838	40.25	40.869
839	40.705	41.447
840	41.767	42.012
841	42.298	42.559
842	43.399	43.087
843	43.702	43.46
844	44.043	43.677
845	44.271	43.901
846	44.499	44.143
847	44.802	44.411
848	44.802	44.678
849	45.068	44.957
850	45.182	45.256
851	45.675	45.566
852	45.826	45.908

853	46.016	46.25
854	46.358	46.554
855	46.547	46.778
856	46.889	46.965
857	46.927	47.083
858	47.002	47.176
859	47.078	47.269
860	47.192	47.331
861	47.23	47.362
862	47.192	47.387
863	47.002	47.399
864	46.927	47.387
865	46.889	47.35
866	46.889	47.3
867	46.927	47.257
868	47.002	47.207
869	47.04	47.163
870	47.078	47.114
871	47.078	47.076
872	46.927	47.039
873	46.927	46.996
874	46.699	46.958
875	46.471	46.921
876	46.244	46.983
877	46.168	47.139
878	46.32	47.337
879	46.737	47.573
880	46.927	47.81
881	47.002	48.046
882	47.382	48.282
883	47.685	48.499
884	48.065	48.723
885	48.254	48.934
886	48.672	49.139
887	48.899	49.307
888	49.051	49.431
889	49.127	49.494
890	49.165	49.543
891	49.013	49.574
892	49.013	49.605
893	49.051	49.636
894	49.165	49.661
895	49.317	49.686
896	49.317	49.705
897	49.392	49.736
898	49.43	49.73
899	49.43	49.668
900	49.354	49.506
901	49.279	49.264
902	49.051	48.984
903	48.596	48.723
904	48.444	48.499
905	48.141	48.288
906	47.913	48.083
907	47.382	48.046
908	47.268	48.095
909	47.23	48.114

910	47.647	48.108
911	47.799	48.102
912	47.837	48.04
913	47.951	47.959
914	47.837	47.859
915	47.989	47.772
916	47.837	47.685
917	47.951	47.592
918	47.913	47.511
919	47.837	47.095
920	47.685	46.399
921	46.358	45.666
922	44.954	44.411
923	43.057	42.621
924	40.402	40.838
925	39.339	40.104
926	39.036	39.732
927	38.998	39.694
928	39.036	39.825
929	39.264	40.067
930	39.491	40.434
931	40.553	40.862
932	41.16	41.31
933	42.64	41.77
934	43.247	42.223
935	44.006	42.671
936	44.157	43.131
937	44.195	43.59
938	44.499	44.069
939	44.575	44.535
940	44.764	44.995
941	44.916	45.461
942	45.561	45.933
943	45.713	46.349
944	45.864	46.691
945	46.509	46.958
946	46.775	47.232
947	46.927	47.443
948	47.04	47.636
949	47.344	47.822
950	47.685	47.984
951	47.837	48.058
952	47.913	48.071
953	47.951	47.89
954	47.837	47.648
955	47.609	47.368
956	46.737	47.163
957	46.585	46.965
958	46.168	46.747
959	45.788	46.486
960	45.675	46.132
961	45.409	45.74
962	45.409	45.287
963	45.106	44.815
964	44.65	44.212
965	43.854	43.609
966	42.602	42.907

967	42.033	42.428
968	41.426	42.348
969	41.578	42.397
970	42.64	42.447
971	43.095	42.534
972	43.588	42.714
973	43.702	42.894
974	43.436	42.975
975	43.019	43.056
976	42.981	43.193
977	43.285	43.385
978	43.588	43.603
979	43.892	43.808
980	44.385	43.963
981	44.612	44.038
982	44.878	43.963
983	44.726	43.833
984	44.006	43.771
985	43.588	43.708
986	43.399	43.646
987	43.209	43.572
988	43.133	43.497
989	42.981	43.416
990	42.905	43.336
991	43.133	43.267
992	43.095	43.186
993	43.436	43.112
994	43.854	43.012
995	43.74	42.522
996	42.981	42.074
997	42.298	41.645
998	40.857	41.397
999	40.402	41.192
1000	39.946	41.266
1001	40.098	41.447
1002	40.402	41.689
1003	41.464	41.95
1004	42.298	42.248
1005	42.943	42.546
1006	43.133	42.845
1007	43.209	43.174
1008	43.588	43.534
1009	43.854	43.901
1010	44.461	44.28
1011	44.764	44.659
1012	45.257	45.069
1013	45.485	45.492
1014	45.864	45.927
1015	46.699	46.349
1016	46.927	46.735
1017	47.306	47.058
1018	47.344	47.281
1019	47.23	47.375
1020	47.154	47.406
1021	47.192	47.399
1022	47.192	47.393
1023	47.23	47.381

1024	47.04	47.375
1025	46.889	47.356
1026	46.889	47.325
1027	46.889	47.3
1028	46.775	47.325
1029	46.889	47.399
1030	47.002	47.524
1031	47.23	47.667
1032	47.534	47.791
1033	47.989	47.903
1034	47.875	48.008
1035	47.951	48.114
1036	47.913	48.214
1037	47.913	48.301
1038	47.951	48.406
1039	48.141	48.499
1040	48.141	48.599
1041	48.292	48.704
1042	48.103	48.804
1043	48.596	48.897
1044	48.861	48.965
1045	49.203	48.965
1046	49.165	48.941
1047	49.127	48.903
1048	49.165	48.847
1049	49.127	48.785
1050	48.899	48.667
1051	48.672	48.468
1052	47.837	48.182
1053	47.609	47.797
1054	47.306	47.424
1055	47.002	47.058
1056	46.737	46.697
1057	46.092	46.337
1058	45.978	45.989
1059	45.637	45.635
1060	45.675	45.287
1061	45.219	44.933
1062	45.106	44.591
1063	45.03	44.243
1064	44.575	43.901
1065	44.499	43.485
1066	43.74	42.783
1067	43.285	42.087
1068	42.223	41.384
1069	41.312	40.695
1070	40.098	39.632
1071	37.974	37.83
1072	37.177	36.289
1073	35.28	35.531
1074	34.635	34.63
1075	33.611	33.698
1076	33.004	32.896
1077	32.397	31.952
1078	31.259	30.976
1079	30.387	29.914
1080	29.059	29.323

1081	28.717	29.404
1082	28.679	30.411
1083	28.907	31.629
1084	29.628	33.058
1085	32.397	34.456
1086	33.763	35.407
1087	36.722	36.388
1088	37.86	37.42
1089	39.757	38.514
1090	40.515	39.62
1091	41.084	40.67
1092	41.919	41.621
1093	42.374	42.509
1094	42.981	43.298
1095	43.399	43.727
1096	44.157	44.094
1097	44.347	44.367
1098	44.688	44.653
1099	45.106	44.951
1100	45.219	45.243
1101	45.409	45.542
1102	45.561	45.846
1103	45.864	46.157
1104	46.016	46.517
1105	46.016	46.971
1106	46.699	47.443
1107	47.04	47.934
1108	47.42	48.456
1109	47.799	49.071
1110	48.747	49.705
1111	49.203	50.314
1112	49.734	50.91
1113	50.493	51.501
1114	51.062	52.072
1115	52.086	52.65
1116	52.541	53.203
1117	53.527	53.738
1118	54.021	54.266
1119	54.438	54.751
1120	55.424	55.185
1121	55.955	55.627
1122	56.638	56.062
1123	56.904	56.484
1124	57.017	56.907
1125	57.093	57.311
1126	57.245	57.696
1127	57.624	58
1128	57.776	58.274
1129	58.042	58.547
1130	58.118	58.821
1131	58.611	59.038
1132	58.725	59.125
1133	58.725	59.1
1134	58.876	59.026
1135	58.99	58.951
1136	58.914	58.87
1137	58.763	58.783

1138	58.611	58.709
1139	58.459	58.647
1140	58.307	58.572
1141	58.08	58.504
1142	58.004	58.429
1143	57.852	58.336
1144	57.7	58.205
1145	57.435	58.031
1146	57.359	57.839
1147	57.169	57.665
1148	57.017	57.528
1149	56.942	57.422
1150	56.866	57.335
1151	56.866	57.255
1152	56.904	57.186
1153	56.904	57.118
1154	56.942	57.05
1155	56.942	56.994
1156	56.942	56.919
1157	56.942	56.851
1158	56.942	56.795
1159	56.942	56.739
1160	56.942	56.677
1161	56.942	56.621
1162	56.904	56.559
1163	56.866	56.515
1164	56.562	56.466
1165	56.41	56.422
1166	55.993	56.397
1167	55.955	56.366
1168	55.879	56.41
1169	56.107	56.577
1170	56.031	56.801
1171	56.486	57.068
1172	56.714	57.242
1173	56.98	57.317
1174	57.055	57.311
1175	57.207	57.273
1176	57.473	57.217
1177	57.359	57.161
1178	57.093	57.093
1179	56.942	57.006
1180	56.714	56.863
1181	56.448	56.695
1182	56.297	56.683
1183	56.145	56.894
1184	56.486	57.106
1185	56.904	57.329
1186	57.093	57.534
1187	57.7	57.727
1188	57.89	57.889
1189	58.004	58.031
1190	58.004	58.118
1191	58.08	58.137
1192	58.004	58.118
1193	58.004	58.081
1194	57.852	58.038

1195	57.776	57.994
1196	57.852	57.951
1197	57.776	57.913
1198	57.7	57.944
1199	57.814	58.038
1200	57.852	58.292
1201	58.004	58.56
1202	58.156	58.827
1203	58.307	59.088
1204	58.914	59.33
1205	59.066	59.529
1206	59.521	59.653
1207	59.749	59.728
1208	59.787	59.771
1209	59.825	59.746
1210	59.711	59.697
1211	59.445	59.604
1212	59.369	59.504
1213	59.066	59.386
1214	59.028	59.256
1215	58.838	59.131
1216	58.763	59.007
1217	58.687	58.889
1218	58.459	58.777
1219	58.383	58.671
1220	58.307	58.566
1221	58.269	58.46
1222	58.156	58.361
1223	58.08	58.261
1224	58.042	58.199
1225	57.928	58.143
1226	57.928	58.081
1227	57.814	58.05
1228	57.966	58.038
1229	57.814	58.038
1230	57.852	58.031
1231	58.004	58.025
1232	58.004	58.013
1233	58.156	58.013
1234	58.118	58
1235	58.118	57.988
1236	58.08	57.957
1237	58.004	57.938
1238	58.004	57.913
1239	58.004	57.889
1240	58.004	57.857
1241	58.004	57.833
1242	58.004	57.814
1243	57.852	57.795
1244	57.814	57.795
1245	57.738	57.795
1246	58.004	57.795
1247	58.004	57.802
1248	58.118	57.789
1249	58.156	57.789
1250	58.231	57.783
1251	58.231	57.783



1252	58.231	57.777
1253	58.08	57.783
1254	58.042	57.777
1255	57.89	57.721
1256	57.738	57.553
1257	57.207	57.354
1258	57.055	57.149
1259	56.942	56.944
1260	56.41	56.745
1261	56.031	56.559
1262	55.841	56.36
1263	55.652	56.18
1264	55.272	55.993
1265	55.121	55.832
1266	55.007	55.664
1267	54.969	55.533
1268	54.855	55.415
1269	54.893	55.31
1270	54.931	55.21
1271	54.817	55.117
1272	54.931	55.03
1273	54.893	54.949
1274	54.969	54.875
1275	54.969	54.806
1276	54.969	54.738
1277	54.931	54.676
1278	55.007	54.608
1279	55.121	54.545
1280	55.007	54.471
1281	54.969	54.415
1282	54.969	54.353
1283	54.893	54.297
1284	54.893	54.247
1285	54.665	54.191
1286	54.779	54.135
1287	54.514	54.086
1288	54.324	54.036
1289	54.21	53.986
1290	54.21	53.943
1291	54.134	53.899
1292	54.058	53.856
1293	54.058	53.812
1294	54.058	53.769
1295	53.907	53.725
1296	53.907	53.713
1297	53.945	53.769
1298	53.983	53.868
1299	53.945	53.98
1300	53.907	54.092
1301	53.907	54.229
1302	54.172	54.359
1303	54.058	54.502
1304	54.324	54.632
1305	54.476	54.806
1306	54.817	54.956
1307	54.855	55.123
1308	54.931	55.279

1309	55.083	55.434
1310	55.197	55.583
1311	55.235	55.739
1312	55.272	55.875
1313	55.348	55.975
1314	55.5	56.018
1315	55.5	56.062
1316	55.652	56.118
1317	55.728	56.167
1318	55.879	56.217
1319	55.804	56.267
1320	55.917	56.31
1321	56.107	56.347
1322	55.879	56.372
1323	55.955	56.372
1324	55.955	56.366
1325	55.955	56.354
1326	56.031	56.335
1327	55.879	56.298
1328	55.917	56.242
1329	55.955	56.192
1330	55.993	56.142
1331	55.955	56.099
1332	55.879	56.055
1333	55.879	56.012
1334	55.917	55.962
1335	55.804	55.919
1336	55.728	55.869
1337	55.576	55.782
1338	55.348	55.676
1339	55.121	55.465
1340	55.045	55.285
1341	54.931	55.092
1342	54.779	54.918
1343	54.628	54.701
1344	54.286	54.521
1345	54.172	54.303
1346	53.907	54.104
1347	53.717	53.905
1348	53.3	53.719
1349	53.186	53.539
1350	53.11	53.359
1351	52.693	53.203
1352	52.541	53.004
1353	52.276	52.83
1354	52.162	52.656
1355	51.972	52.482
1356	51.934	52.308
1357	51.934	52.159
1358	51.934	51.992
1359	51.934	51.811
1360	52.162	51.675
1361	51.934	51.526
1362	51.782	51.364
1363	51.782	51.209
1364	51.593	51.066
1365	51.327	50.904

1366	50.986	50.767
1367	50.417	50.618
1368	50.227	50.376
1369	49.468	49.835
1370	49.051	49.525
1371	48.596	49.32
1372	48.141	49.028
1373	48.141	48.878
1374	47.951	48.978
1375	47.951	49.077
1376	48.254	49.146
1377	48.52	49.189
1378	48.747	49.183
1379	49.051	49.164
1380	49.127	49.146
1381	49.051	49.121
1382	49.013	49.003
1383	48.861	48.866
1384	48.71	48.711
1385	48.444	48.58
1386	48.065	48.443
1387	47.951	48.332
1388	47.837	48.325
1389	47.951	48.344
1390	47.951	48.381
1391	47.989	48.456
1392	48.216	48.549
1393	49.051	48.586
1394	49.127	48.493
1395	48.747	48.245
1396	48.596	47.754
1397	47.344	47.368
1398	46.737	47.07
1399	46.244	46.884
1400	46.016	47.02
1401	46.168	47.356
1402	46.471	47.754
1403	47.192	48.238
1404	48.52	48.729
1405	49.203	49.344
1406	49.734	49.842
1407	50.986	50.407
1408	51.593	50.948
1409	52.389	51.501
1410	52.693	51.985
1411	53.3	52.52
1412	53.679	52.936
1413	53.983	53.39
1414	54.362	53.831
1415	54.324	54.272
1416	54.893	54.701
1417	55.083	54.968
1418	55.31	54.887
1419	55.235	54.253
1420	54.969	53.359
1421	54.021	52.632
1422	53.338	51.824

1423	51.289	50.767
1424	49.734	48.661
1425	47.23	47.834
1426	46.433	47.07
1427	46.168	46.977
1428	46.016	47.052
1429	46.016	47.238
1430	46.623	47.617
1431	47.116	48.12
1432	47.951	48.686
1433	48.368	49.202
1434	48.975	49.63
1435	49.658	50.084
1436	50.113	50.538
1437	50.986	50.991
1438	51.213	51.463
1439	51.934	51.681
1440	52.276	51.693
1441	52.503	51.656
1442	51.934	51.619
1443	51.555	51.557
1444	51.024	51.476
1445	51.024	51.395
1446	51.024	51.308
1447	51.137	51.426
1448	51.327	51.718
1449	51.706	52.134
1450	52.086	52.507
1451	52.351	52.7
1452	52.541	52.743
1453	52.693	52.712
1454	52.617	52.489
1455	52.541	52.557
1456	52.2	52.663
1457	52.086	52.737
1458	52.465	52.756
1459	52.503	52.675
1460	52.579	52.464
1461	52.541	52.172
1462	52.389	51.849
1463	51.934	51.538
1464	51.555	51.221
1465	50.72	50.898
1466	50.341	50.643
1467	49.886	50.525
1468	49.81	50.401
1469	49.658	50.252
1470	49.582	50.109
1471	49.468	50.177
1472	49.544	50.426
1473	49.772	50.693
1474	50.075	50.972
1475	50.265	51.246
1476	50.72	51.526
1477	51.213	51.811
1478	51.631	52.11
1479	52.048	52.402

1480	52.048	52.694
1481	52.238	52.986
1482	52.541	53.284
1483	52.845	53.57
1484	53.414	53.843
1485	53.755	54.123
1486	54.248	54.403
1487	54.476	54.657
1488	54.817	54.925
1489	55.083	55.179
1490	55.386	55.353
1491	55.841	55.502
1492	55.993	55.739
1493	56.145	56.049
1494	56.524	56.354
1495	56.562	56.652
1496	56.638	56.944
1497	56.866	57.23
1498	57.055	57.503
1499	57.245	57.783
1500	57.852	58.05
1501	58.231	58.299
1502	58.914	58.429
1503	59.066	58.379
1504	59.066	58.299
1505	58.876	58.23
1506	58.725	58.168
1507	58.156	58.106
1508	57.966	57.982
1509	57.511	57.596
1510	57.093	57
1511	57.055	56.472
1512	56.638	55.937
1513	56.486	55.415
1514	55.804	54.906
1515	55.235	54.415
1516	54.324	53.949
1517	53.907	53.495
1518	53.755	53.048
1519	52.996	52.613
1520	52.807	52.184
1521	52.162	51.668
1522	51.934	50.904
1523	50.72	50.127
1524	50.227	49.357
1525	49.354	48.586
1526	48.065	47.816
1527	47.496	47.045
1528	46.168	45.84
1529	45.409	43.889
1530	43.133	42.099
1531	41.426	39.732
1532	39.15	36.656
1533	34.673	33.617
1534	32.283	30.336
1535	27.997	27.217
1536	26.214	25.11

1537	22.686	22.737
1538	21.016	19.909
1539	19.309	17.461
1540	16.578	15.578
1541	14.871	13.472
1542	11.077	10.837
1543	9.18	8.084
1544	5.918	5.903
1545	4.476	4.542
1546	3.3	2.964
1547	1.517	1.386
1548	0.683	0
1549	0.076	0
1550	0.038	0
1551	0	0
1552	0.076	0
1553	0.076	0
1554	0.076	0
1555	0.076	0

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**Cc:** Hurlin, David[hurlin.david@epa.gov]; Schmidt, Oliver (EEO)[Oliver.Schmidt@vw.com]; Kata, Leonard (EEO)[Leonard.Kata@vw.com]  
**From:** Hennard, Mike (EEO)  
**Sent:** Fri 2/14/2014 3:07:28 PM  
**Subject:** Recall: Volkswagen Group of America - Requaet for calendar year 2014 test exemption

Hennard, Mike (EEO) would like to recall the message, "Volkswagen Group of America - Requaet for calendar year 2014 test exemption ".

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Morning Transportation  
**Sent:** Fri 2/14/2014 3:11:09 PM  
**Subject:** POLITICO's Morning Transportation, presented by POWERJobs: Another day of snow-snarled commutes - Contested VW vote ends today - Drug, alcohol CDL database coming soon

By Adam Snider

Featuring Kathryn A. Wolfe

**BETTER LATE THAN NEVER:** Getting around many parts of the country will still be difficult today after sleet and freezing rain coated a heavy snowfall. In some spots, the wintery slush has frozen and, with more snow coming today, could be a dangerous combination that spells more chaos on the roads. In the nation's capital, the federal and D.C. governments are on a two-hour delay, giving true political junkies time to watch a few new episodes of the Hill drama House of Cards before heading to work (season two is out at 8am today: <http://bit.ly/1gdY2V3>).

Metro will be open again today, but a few hundred miles north, the Metro-North commuter railroad is only running at 40 percent of normal capacity. Dulles and Reagan National airports will be open after closing for part of Thursday, though plenty of flights today will be cancelled (airport updates here: <http://bit.ly/1bQTzTv>). Amtrak will run "most" Northeast Regional trains today and has "reduced frequencies" on the faster Acela Express, but most other routes are running normally. Kathryn has more on POLITICO: <http://politi.co/1nwqhif>

**Spread out:** Anybody braving the snow and slush for a train ride in D.C. yesterday was rewarded with plenty of room to lounge around. "Anemic is a good word," a spokesman said when MT asked about the ridership figures yesterday afternoon. At the time, ridership was 13 percent of what it would be on a normal Thursday. It was down over 300,000 rides - and that didn't even include the evening commute. Winter weather causes a major downturn in Metro ridership; the impact of a snowstorm several months ago was three times that of the government shutdown in October, according to Metro's planning blog ( <http://bit.ly/NHfMyc>).

**Snow jet:** Not content to use a mere snow-blower or plow, Amtrak sent out an Instagram picture of its "snow jet" that clears the tracks of snow as it rides down them. Give it a look: <http://bit.ly/1iTzsJr>

**VW UNION VOTE GETTING NASTY:** Voting for 1,500 hourly workers at a VW plant in Chattanooga, Tenn., ends today. It's a historic election - if the workers choose to join the UAW, it would be the first unionization of a foreign automaker in the U.S. The German company is used to unions but politicians in the South aren't exactly on board. The UAW hit back at Sen. Bob Corker, who claimed - somewhat vaguely - that the company would reward the plant with more work if it defeated the union, something the automaker has denied. Here's VW worker Eric DeLacy in an op-ed: "I've had jobs before, but I believe that Volkswagen is where I can really have a career and a future... The more I thought about it, the clearer it became that I supported unionizing. Unions give people a say in the decisions that matter and a voice that's heard louder and stronger when we're speaking together." <http://tnne.ws/1gdNrJI>



**Come to Michigan:** Virg Bernero, mayor of Lansing, Mich., said the automaker should come to Michigan, where "basic American rights and labor law" are respected and cars are a way of life. "We're a car town. We make things. It's what we do," he said on "The Ed Show" on MSNBC. "We embrace all manufacturing - union, non-union, you name it." He also took a swipe at Corker's anti-union talk: "Corker should put a cork in it, don't you think Ed? Give me a break!" <http://bit.ly/1flsGb7>

**IT'S A PITY FRIDAY ONLY COMES ONCE A WEEK.** Thanks for reading POLITICO's Morning Transportation, your daily tipsheet on trains, planes, automobiles and ports, where today we're celebrating the circa 270 beheading of Valentine for conducting secret marriages against the will of Emperor Claudius II. Doesn't that make you want to buy some flowers and chocolate? Please be in touch: [asnider@politico.com](mailto:asnider@politico.com). And follow me on Twitter: [@AdamKSnider](https://twitter.com/AdamKSnider).

"With rusty train track ties, we'll carve new streets and sidewalks..." <http://bit.ly/1gc5Xla>

**PROGRAMMING NOTE:** MT is taking Monday off for Presidents Day, but your favorite transportation newsletter will be back in your inbox on Tuesday morning.

**HEADS UP FOR NEXT WEEK:** The U.S. Chamber of Commerce - a major lobbying force and player in the transportation bill - will hold its second annual transportation summit next Thursday. The business group gathered a guest list that reads like a who's who in transportation. A few of the highlights: DOT Secretary Anthony Foxx, ACI-NA President and CEO Kevin Burke, AAR leader Ed Hamberger, APTA head Michael Melaniphy, Norfolk Southern Chairman and CEO Charles "Wick" Moorman and, of course, Chamber transportation expert Janet Kavinoky.

**\*\*A message from POWERJobs:** Jobs on our radar this week: **Rail Coalition Manager** at Consumers United for Rail Equity, **Central Control Supervisor** at METRO and **Senior Aviation Analyst** at SAIC. Interested? Apply to these jobs and more at [www.POWERJobs.com](http://www.POWERJobs.com); finally, a career site made for YOU!\*\*

**BUZZKILL:** The FMCSA is poised to publish a notice of proposed rulemaking creating a national drug and alcohol clearinghouse for CDLs. The rule (<http://1.usa.gov/1b0nAFx>) has been sent to the Federal Register, an agency official told MT on Thursday, and could be published as soon as today. The 93-page NPRM includes a 60-day comment window, after which FMCSA can move forward with finalizing the rule and incorporating any needed changes. MAP-21 mandated that the clearinghouse - a database of drivers and their drug/alcohol test results and related accidents - be in place by Oct. 1 this year. The industry's big lobby, the American Trucking Associations, praised the long-delayed rule, as did the Commercial Vehicle Safety Alliance. "This rule will help to close some loopholes and tighten the oversight of the drug and alcohol testing program in this country, ultimately improving safety by helping to identify and take unsafe operators off the road," CVSA Executive Director Steve Keppler said in a statement to MT.

**COMMITTEE SHUFFLE:** The departure of former Sen. Max Baucus and arrival of new Sen.

John Walsh set off a series of chairmanship changes and other committee shuffles. Walsh, Montana's former lieutenant governor, will sit on the Commerce Committee that, as he noted in a statement, "has jurisdiction over a large range of issues affecting Montana including highway safety, energy, the Essential Air Service, railroads and freight, tourism and economic development." Ron Wyden, a big proponent of bonds for transportation projects, takes the gavel of the Finance Committee tasked with funding this year's bill. Sen. Mark Warner - a vocal supporter of an infrastructure bank - is expected to take the open Democratic seat on Finance. Sen. Maria Cantwell, who's worked on a number of aviation issues as chair of the Commerce panel with jurisdiction over it, also takes the Small Business Committee gavel.

**OLD DOMINION PRIUS OWNERS REJOICE:** The Virginia Senate has voted to repeal the \$64 annual hybrid vehicle fee that was part of former Gov. Bob McDonnell's signature transportation bill. The lopsided 37-1 vote and Gov. Terry McAuliffe's support mean the fee isn't long for this world. The AP has more: <http://bit.ly/1gCcyo1>

### **THE AUTOBAHN (SPEED READ)**

- Ireland is defending its air safety record amid the uproar over it giving Norwegian Air Shuttle an operating license. Wall Street Journal: <http://on.wsj.com/1eTglQH>

- GM is recalling nearly 800,000 Cobalt and Pontiac G5 vehicles. L.A. Times: <http://lat.ms/1aZOnBK>

- Koch brothers-backed Americans for Prosperity has a new radio ad against T&I ranking member Nick Rahall. Roll Call: <http://bit.ly/1nwPjxK>

- A plurality of Californians said in a new poll they'd vote to stop the state's high-speed rail line. The Business Journal: <http://bit.ly/1bsNVfO>

- Counterpoint: "Don't give up on the bullet train, California." Op-ed by Tom Zoellner in the LAT: <http://lat.ms/1orZw1I>

- Ambassador Bridge owner Matty Moroun wins approval for a six-lane span between Windsor and Detroit. The Windsor Star: <http://bit.ly/MQfbcE>

- Meanwhile, Canada is paying for a new bridge between the cities, and now there's a bill in Congress to build a Customs plaza on the U.S. side. CBC News: <http://bit.ly/1fltVan>

- AP analysis of records and audio tapes finds nobody died because of the George Washington Bridge closures. <http://bit.ly/MhQQwo>

- Researchers discover safer, more efficient replacement for lithium-ion batteries. Wired: <http://wrd.cm/NHwEF6>

- Taxpayers for Common Sense says electric automaker Fisker is another example of a DOE failure. <http://bit.ly/1ILRSNB>

**THE COUNTDOWN:** MAP-21 expires and DOT funding runs out in 229 days. FAA policy is up in 594 days. The mid-term elections are in 263 days and the 2016 presidential election is in 998 days. MLB's Opening Day is in 45 days.

**CABOOSE - Snow route is better than no route:** The recent frozen downfall had some bus-riders brushing up on the snow route map. Your MT host conveniently has one with lots of buses right out his front door, but not everybody is so lucky. Check out maps of the snow routes in D.C. and other places like Philly, Baltimore and Chicago, via the Atlantic Cities:  
<http://bit.ly/1gcPRbv>

**\*\*A message from [POWERJobs](#):** Tap into the power of POWERJobs for the newest job opportunities in the Washington area from the area's top employers, including **METRO, SAIC** and **Accenture**. Powered by names you trust - POLITICO, WTOP, WJLA/ABC-TV, NewsChannel 8 and Federal News Radio- POWERJOBS is the ultimate career site with more than **2 million job searches** and nearly **17,000 applications submitted** this year so far. Connect through Facebook or LinkedIn, search jobs by industry and set up job-specific email alerts using [www.POWERJobs.com](http://www.POWERJobs.com), the site for Washington's top talent.\*\*

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=====.

**To:** Ball, Joel[ball.joel@epa.gov]; Good, David[good.david@epa.gov]; Pidgeon, Bill[pidgeon.bill@epa.gov]; [redacted] Ex. 7  
**Cc:** Schmidt, Oliver (EEO)[Oliver.Schmidt@vw.com]; [redacted] Ex. 7  
**From:** Glas, Tobias  
**Sent:** Fri 2/14/2014 9:08:23 PM  
**Subject:** FW: IUVP

Hello gentleman !

Here is a quick overview about the IUVP program for AUDI and VW:

**MY 2012 Low Mileage** ✓

-

-17 test groups

-39 vehicles

-11 ORVR + SHED tests

All vehicles tested and submitted through Verify ✓

-

**My 2008 High Altitude:** ✓

-

-14 test groups

-11 vehicles

-vehicles for 3 test groups couldn't be found

-

All vehicles tested and submitted through Verify ✓

-

-

**My 2008 High Mileage:**

-

-14 Testgroups

-50 vehicles

-11 ORVR + SHED tests

-vehicles for one test group couldn't be found

All but one vehicle are tested and submitted. Vehicle pick-up for the missing car was scheduled for January but was rescheduled by customer to March.

As soon as the car is tested I will let you know.

If you have any questions don't hesitate to contact me.

Best regards

**Tobias Glas**

In-Use Emission Compliance Specialist

Engineering & Environmental Office

Volkswagen Group of America, Inc.

3800 Hamlin Road

Auburn Hills, MI 48326

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Phone: (248) 754-4211

Cell: (248) 494-1537

Fax: (248) 754-4207

E-Mail: [Tobias.Glas@vw.com](mailto:Tobias.Glas@vw.com)

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Giles, Michael (EEO)[michael.giles@vw.com]  
**From:** Allen, Gregory  
**Sent:** Fri 2/14/2014 9:21:31 PM  
**Subject:** Decision Information Uploaded to Verify

Hello Jim,

A confirmatory test decision was uploaded to Verify for the MY2015 Audi A8L, Testgroup: FVGAV06.3VUM and Vehicle I.D: AU641 40848 /15.

Please let me know if you have any questions.

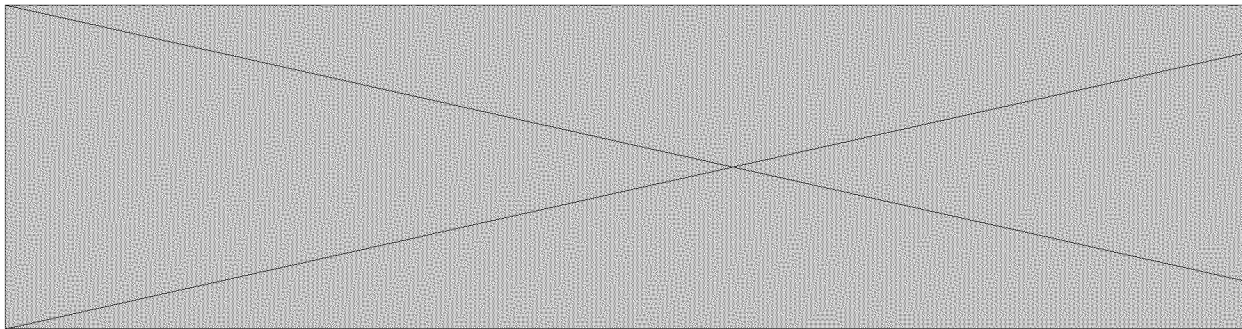
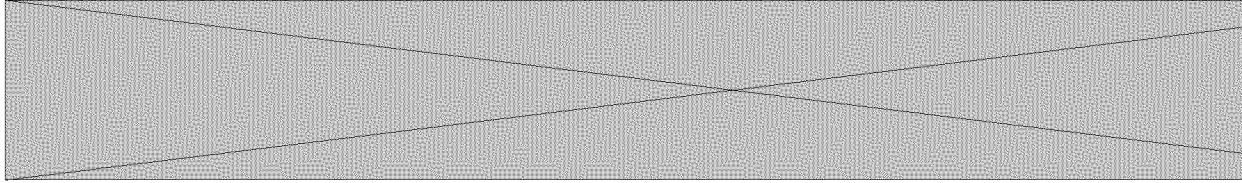
Regards,

Greg Allen

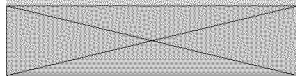
VWGoA EEO

(248)754-4209

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** The Hill  
**Sent:** Sat 2/15/2014 12:16:44 PM  
**Subject:** The Hill's E-news: February 15, 2014



February 14, 2014



## **The Hill: Cruz to get hero's welcome in Iowa, New Hampshire**

By Alexander Bolton

Conservatives in Iowa and New Hampshire are preparing a hero's welcome for Sen. Ted Cruz (R-Texas) after he showed up Senate Republican leaders during a crucial vote on the debt limit.

## **The Hill: Obama uses pulpit to push wage hike**



By Justin Sink

President Obama used his weekly address on Saturday to ask voters to pressure lawmakers into making their positions known on raising the minimum wage.

### **The Hill: GOP lashes out at healthcare cuts**

By Julian Hattem

Rep. Tom Rooney (R-Fla.) lashed out at the Obama administration on Saturday over upcoming cuts to the popular federal program that allows private companies to enroll the elderly under Medicare.

### **The Hill: Obama launches climate change fund**

By Laura Barron-Lopez

President Obama announced a new climate change "resiliency fund" in a Friday night speech in drought-struck California.

### **The Hill: Obama: Immigration reform will get done by end of presidency**

By Justin Sink

President Obama predicted that Congress would pass an immigration reform bill before the end of his presidency in a Univision Radio interview airing Friday.

### **The Hill: Obama: Deportations not up to just me**

By Mike Lillis

President Obama on Friday warned House Democrats that there are limits to what his administration can do unilaterally to scale back deportations, even those that splinter immigrant families.

### **The Hill: Al Roker apologizes for de Blasio jab**

By Rebecca Shabad

NBC's "Today" show meteorologist Al Roker apologized on Friday for a tweet he posted a day before, blasting New York City Mayor Bill de Blasio for not closing down schools during a snowstorm.

## **The Hill: Cruz: GOP senators think they have 'foolish, gullible constituents'**

By Mario Trujillo

Sen. Ted Cruz (R-Texas) explained fellow Republican senators' anger over his filibuster of the debt-ceiling vote by saying that they hate being "forced to tell the truth."

## **The Hill: Senate Dems warn Obama on Social Security, Medicare cuts**

By Erik Wasson

Senate Democrats on Friday told President Obama they don't want to see cuts to Social Security, Medicare or Medicaid in his annual budget.

## **The Hill: Airlines' snow price-tag may have topped \$80M**

By Keith Laing

Weather-related flight delays that piled up earlier this week as snow closed airports on the East Coast could have cost airlines more than

\$80 million, according to an analysis conducted by The Hill.

**The New York Times: Volkswagon vote is defeat for labor in the South**

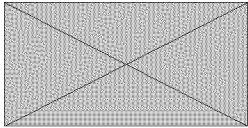
By Steven Greenhouse

In a defeat for organized labor in the South, employees at the Volkswagen plant here voted 712 to 626 against joining the United Automobile Workers.

**The Washington Post: Nancy Pelosi persists, even as the House Democrats' prospects fade**

By Ed O'Keefe and Karen Tumulty

It had been a good week — a very good week — for Nancy Pelosi. So good, in fact, that she and her leadership team felt the need to caution their House Democratic troops not to gloat over the fact that they had scored a clean win against the majority Republicans over raising the debt ceiling.



## **Relief for 9/11 cancer survivors**

By Tim Devaney

The Obama administration is bolstering the medical benefits for some 9/11 responders and survivors who developed rare forms of cancer because they were exposed to the toxic fallout of the terrorist attacks.

## **White House denies 'new review' of Syria options**

By Justin Sink

The White House on Friday looked to downplay Secretary of State John Kerry's remark that President Obama had asked for new options to address the deepening civil war in Syria.

## **Hagel close to appointing new ethics adviser**

By Kristina Wong

Defense Secretary Chuck Hagel is close to making a decision on a new senior officer who will advise and assist him with ethics issues within the ranks, the Pentagon press secretary said Friday.

### **Montana senator heads to Commerce panel**

By Julian Hattem

The newest member of Congress, Sen. John Walsh (D-Mont.), will serve on the Senate Commerce Committee, Chairman Jay Rockefeller (D-W.Va.) announced on Friday.

### **Brown calls for expansion of Earned Income Tax Credit**

By Ramsey Cox

Sen. Sherrod Brown (D-Ohio) called for an expansion of the Earned Income Tax Credit (EITC), saying it would strengthen the middle class and grow the economy.

## **Privacy group reaches NSA settlement, appeals case**

By Julian Hattem

The Electronic Privacy Information Center (EPIC) has agreed to a settlement with the National Security Agency (NSA) in its long-running attempt to get the agency to release documents.

## **Opinion: American ingenuity will help meet climate goals**

By Adam Monroe, regional president of Americas for Novozymes

In just five years, America built an entire new industry from the ground up, positioning the U.S. as a leading innovator in biofuels.

## **Conan O'Brien airs mock Joe Biden ad for 2016**

By Rebecca Shabad

“I’m Joe Biden and I don’t not fully and especially not partially endorse this message.”

### **Jordan or LeBron? Obama takes sides**

By Mario Trujillo

President Obama said former NBA star Michael Jordan will always be his guy — but added LeBron James has a chance to be as good as anyone.

### **Dem: 'Climate denier' can't win in 2016**

By Laura Barron-Lopez

Sen. Sheldon Whitehouse said Republicans would be "finished" if they nominated a skeptic.

### **Bullock says Senate decision was none of Reid's 'damn business'**

By Mario Trujillo

Montana Gov. Bullock eventually tapped his Lt. Gov. John Walsh (D) to be Sen. Max Baucus's



successor.

## **White House dismisses trade backdown**

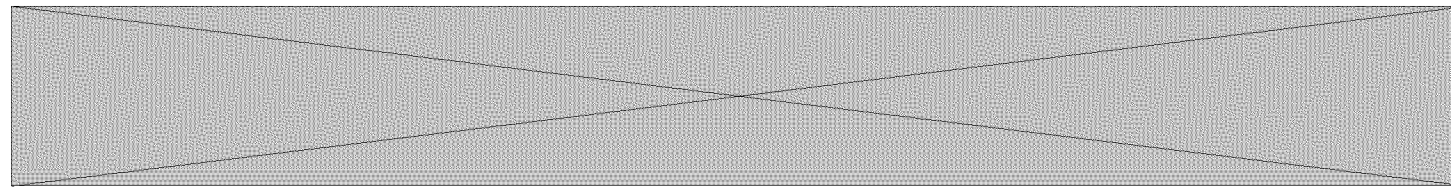
By Vicki Needham

The White House says Biden didn't back away from ambitious agenda.

## **Be My ... healthcare?**

By Rebecca Shabad

President Obama's nonprofit group Organizing for Action sent supporters an email Friday encouraging them to send an "Adorable Care Act" valentine.



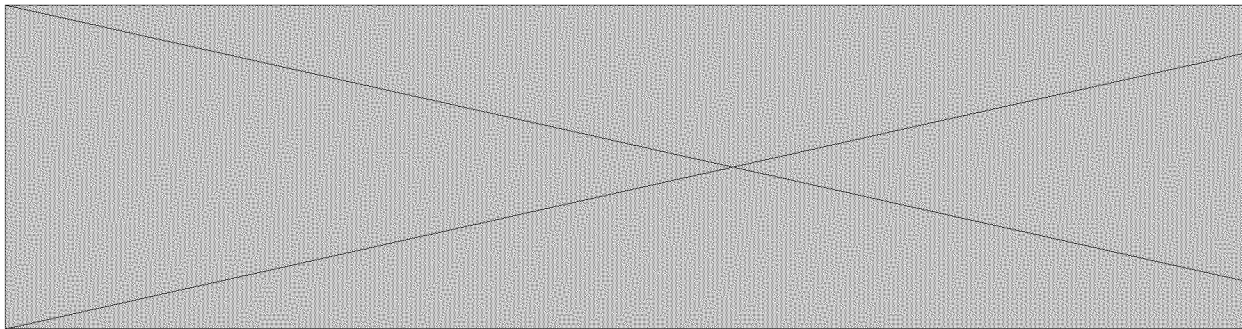
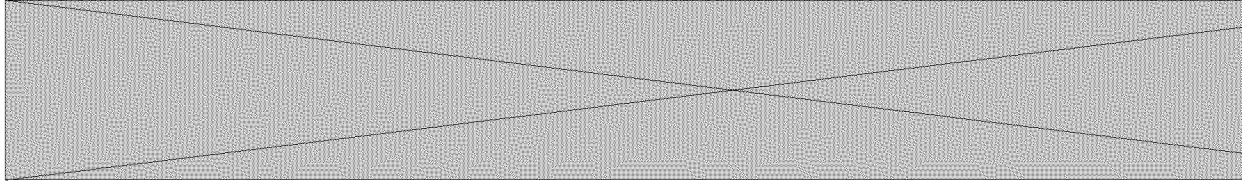
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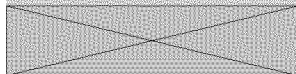
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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** The Hill  
**Sent:** Sun 2/16/2014 12:18:27 PM  
**Subject:** The Hill's E-news: February 16, 2014



February 16, 2014



## **The Hill: NSA reforms stalls in committee**

By Julian Hattem

Legislation to rein in the National Security Agency's surveillance programs has stalled in the House and Senate.

## **The Hill: A bad omen for Pentagon budget?**

By Jeremy Herb

Congress quickly reversed pension cuts amid a major backlash from veterans groups.

## **The Hill: Resurgent Holder pushes agenda**

By Niall Stanage

Conservatives hoping to celebrate the departure of Attorney General Eric Holder might be in for a long wait.

## **The Hill: Obama signs clean debt hike**

By Laura Barron-Lopez

President Obama on Saturday signed into law the bill raising the nation's debt ceiling.

## **The Hill: Cuba shuts down US travel visas**

By Pete Kasperowicz

The government of Cuba announced that it will no longer process visas for U.S. travel to Cuba.

## **The Hill: Obama faces budget dilemma**

By Erik Wasson

President Obama is facing a deepening dilemma about whether to abandon cuts to Social Security in his next fiscal blueprint, which is due out in March.

## **The Hill: Obama picks create push to reform ambassador choices**

By Julian Pecquet

A string of blunders by President Obama's ambassadorial picks and growing frustration from Republicans and the diplomatic corps are creating new momentum for reforming the long-standing U.S. practice of rewarding big donors with plum posts.

## **The Hill: Auto workers reject union in Tennessee**

By Ian Swanson

Employees at a Volkswagen plant in Tennessee have rejected joining the United Automobile Workers union in a major defeat for organized labor in the South.

## **The Hill: US: Russia can't have 'happy Olympics' and back brutal Syrian regime**

By Ian Swanson

A U.S. official sharply criticized Russia's government for not doing more to end violence

in Syria.

### **The Hill: Romney to reappear on ‘Meet the Press’**

By Julian Hattem

Former Republican presidential nominee Mitt Romney will appear on NBC’s “Meet the Press” on Sunday.

### **The Hill: Germany, France seek to bypass US networks**

By Julian Hattem

German Chancellor Angela Merkel and French President Francois Hollande will discuss ways to avoid having their emails and other data go through the United States.

### **The Hill: Oshie for 2016**

By Julian Hattem

The Internet on Saturday morning erupted in praise for U.S. hockey player T.J. Oshie after he scored in a shootout competition to beat Russia in the Olympics.

## **The Wall Street Journal: Senator's campaign behind union defeat**

By Siobhan Hughes

GOP Sen. Bob Corker won his unusually forceful campaign against unionizing workers at a Volkswagen plant in his home state.

## **The Washington Post: Democrats face tensions within their party, too**

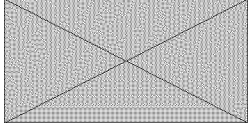
By Dan Balz and Philip Rucker

Pundits have focused on the warring factions within the GOP, but among Democrats, there is a schism between the establishment and a populist wing.

## **The New York Times: In the debate over health care, 'real people' become human volleyballs**

By Jonathan Weisman

Democrats and Republicans alike resort to “real people” to get their messages across, sometimes with unexpected consequences.



## **Grassley blasts Obama weed memo**

By Ian Swanson and Julian Hattem

Sen. Charles Grassley (R-Iowa) says the Treasury Department is overstepping its bounds with a memo outlining how banks can provide services for businesses selling marijuana.

## **McCain: 'Moving further' from peace in Syria**

By Julian Hattem

Sen. John McCain (R-Ariz.) is worried that peace in Syria may be harder to achieve than ever, as international negotiators fail to reach agreement on a path forward to quell the violence.

## **Airlines' snow price-tag may have topped**



## **\$80M**

By Keith Laing

Weather-related flight delays that piled up earlier this week as snow closed airports on the East Coast could have cost airlines more than \$80 million, according to an analysis conducted by The Hill.

## **US law firm ensnared in spying by NSA ally**

By Julian Hattem

A U.S. law firm advising Indonesia's government on trade issues was spied on by a foreign government, according to a new top secret document released by former National Security Agency (NSA) contractor Edward Snowden.

## **Justice Scalia: Chicago pizza 'shouldn't be called pizza'**

By Laura Barron-Lopez

The verdict is in. Supreme Court Justice

Antonin Scalia says Chicago-style pizza "shouldn't be called pizza."

### **Kerry to begin climate blitz**

By Laura Barron-Lopez

Secretary of State John Kerry will begin a series of speeches on Sunday that will call on the world to tackle climate change.

### **Conservative leader Vander Platts turns down Iowa Senate run**

By Julian Hattem

Bob Vander Platts, Iowa's leading religious conservative and a former gubernatorial candidate, won't be running for the Senate this year.

### **McConnell defends debt ceiling vote**

By Laura Barron-Lopez

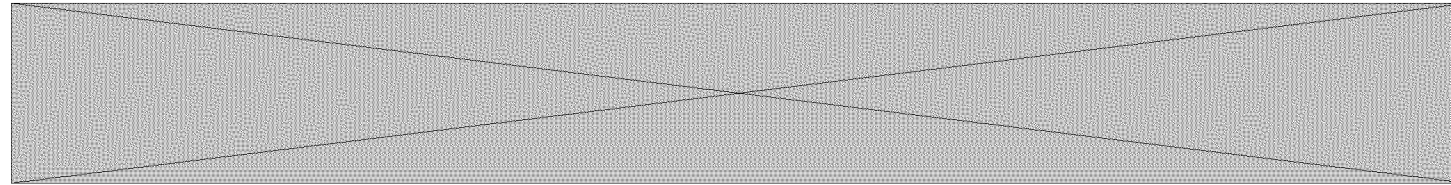
Sen. Mitch McConnell (R-Ky.) is defending his

procedural vote that allowed the Senate to approve legislation raising the debt ceiling.

## **Dems push Walmart to give up cigarette sales**

By Ian Swanson

A group of Democrats are urging Walmart to follow CVS Caremark and discontinue selling tobacco products.



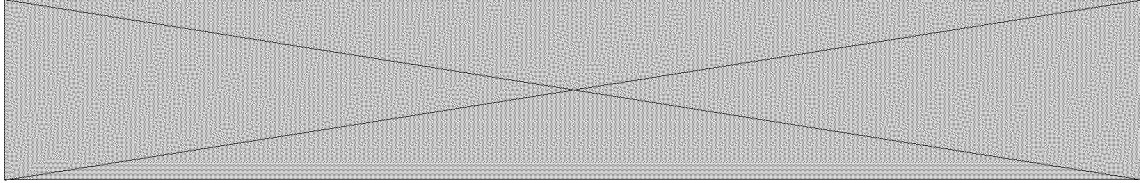
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**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Mon 2/17/2014 5:03:23 PM  
**Subject:** Green Car Report Daily Headlines

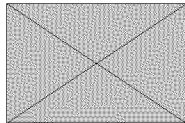
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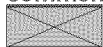
## Fisker Sold, Tesla And Apple, Diesel Crossovers: Today's Car News

Feb 17, 2014 04:46 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



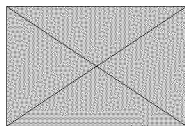
Today on Green Car Reports: The assets of Fisker Automotive are sold to Chinese auto-parts conglomerate Wanxiang, why Apple may have come closer to acquiring Tesla Motors than it appears, and we drive new diesel crossovers from Audi, Jeep, and Mercedes-Benz. all this and more on Green Car Reports. The remains of Fisker Automotive were sold for...

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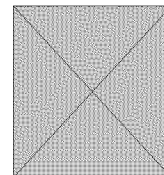
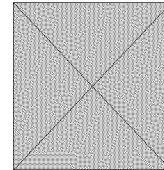
## New Diesel SUVs & Crossovers: Jeep, Audi, Mercedes Fuel Economy Tested

Feb 17, 2014 04:41 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



You read a lot about hybrids and electric cars these days, but fuel-efficient diesel engines will be coming in certain classes of cars this year and in the future. The most recent crop of diesel launches has been in the crossover utility vehicle class, of which we've now driven

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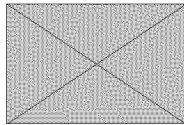
three different models. The 2013 Mercedes-Benz GLK 250 BlueTEC hit the...

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## Opel's New 3-Cylinder Engine May Preview Volt's Next Range-Extender

Feb 17, 2014 12:40 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



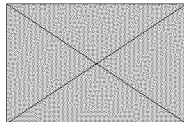
It's been expected for some time that the next generation Chevrolet Volt could use a smaller, more efficient and likely three-cylinder power unit as its range-extending engine. Now, we may be getting our first glimpse of that engine, in a more conventional installation than last year's Opel Monza concept. GM's European arm Opel is launching a new...

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## Did Apple Discuss Buying Tesla With Elon Musk Last Fall?

Feb 17, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



On Wednesday, Tesla will report its full-year financial results for 2013, a year in which it seems to have sold more than 20,000 Model S electric luxury sedans. It's an impressive figure for the startup electric automaker, and enough to make you wonder what Tesla could achieve with one of the world's largest companies behind it. According to the...

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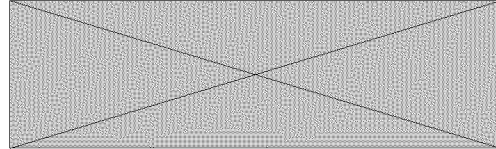
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**To:** Bunker, Byron[bunker.byron@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 2/18/2014 2:12:39 PM  
**Subject:** A.M. NEWSCAST: Next steps for VW workers, UAW | Opponents set next targets | Hyundai field inspection | Chevy Sonic daredevil

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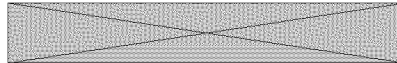
**February 18, 2014**



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Automotive News is located at 1155 Gratiot Ave., Detroit, Michigan, 48207

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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Morning Transportation  
**Sent:** Tue 2/18/2014 3:03:11 PM  
**Subject:** POLITICO's Morning Transportation, presented by POWERJobs: Obama to announce truck fuel standards — Biden, Foxx, LaHood gather — VW vote a stinging loss for unions

By Adam Snider

Featuring Kevin Robillard

**THIS WEEK IN TRANSPORT - Truck fuel efficiency:** President Barack Obama heads to a Safeway distribution center in Maryland today to call for action improving fuel efficiency for medium and heavy-duty trucks, according to the White House. Obama will ask EPA and DOT to issue the next set of efficiency rules by March 2016; a fact sheet says that means the NPRM would be in by March 2015, just over a year away. "He is also partnering with private-sector leaders to deploy advanced vehicles and calling on Congress to take steps to expand fuel choices for American drivers," a White House official said. "Those steps will help bolster American energy security, cut carbon pollution, save money, and support manufacturing innovation." There's more info in the fact sheet (<http://politico.pro/1cS3dWh>) and report (<http://politico.pro/1f6ORqZ>) released today by the White House. And Pro Energy's Alex Guillen has more in his story: <http://politico.pro/1m4KVar>

**That's not all for today:** Tonight the Old Line State's gubernatorial candidates gather for a forum on the Purple Line that has drawn strong reactions both in support and opposition. Republican Ron George joins three Democrats: Lt. Gov. Anthony Brown, Del. Heather Mizeur and Del. Jolene Ivey, who is "speaking on behalf of" Attorney General Doug Gansler. And this afternoon, the National Research Council holds a talk on a new report on transportation spending in economic downturns.

**Wednesday:** With the stimulus celebrating its fifth birthday, Vice President Joe Biden visits America's Central Port in Granite City, Ill., to talk about the recovery bill and "highlight the need for continued investment in infrastructure to create jobs and grow our economy," according to the White House. Transportation Secretary Anthony Foxx and his predecessor at 1200 New Jersey Avenue, Ray LaHood, will both be there as well.

**Thursday:** The U.S. Chamber of Commerce holds its second annual "Infrastructure Intersection Summit" with some big names in the transportation world: Secretary Foxx, the Chamber's Janet Kavinsky and former Deputy Secretary John Porcari, to name a few. Leaders of some of the key groups involved in transportation will also be on hand: APTA's Michael Melaniphy, AAR's Ed Hamberger and ACI-NA's Kevin Burke. <http://uscham.com/1mp7zhq>

**TUESDAY IS THE NEW MONDAY.** Thanks for reading POLITICO's Morning Transportation, your daily tipsheet on trains, planes, automobiles and ports, where on this day in 1930 Clyde W. Tombaugh caught photographic proof of Pluto at Lowell Observatory in Flagstaff, Ariz. The once-planet takes so long to orbit the sun (nearly 250 earth years) that between its discovery and its demotion out of the planetary club in 2006, it didn't even make a third of an orbit. Please be in touch: [asnider@politico.com](mailto:asnider@politico.com). And follow me on Twitter:



@AdamKSnider.

"I'm going over to the low side of the road..." <http://bit.ly/NpoX6c>

**VW VOTE A BLOW TO SOUTHERN UNIONS:** Kevin has the story on the major setback for organized labor: "Volkswagen workers in Chattanooga, Tenn., have rejected the United Auto Workers, shooting down the union's hopes of securing a foothold at a foreign-owned auto plant in the South. The vote was 712 to 626, said the UAW, which blamed the loss on 'politicians and outside special interest groups.' The vote, announced late Friday night after three days of balloting, is a devastating loss for the UAW, whose membership has plummeted from a high of 1.5 million in 1979 to around 400,000 today. Outgoing UAW President Bob King had staked his legacy on organizing a Southern auto plant for the first time. But the decision is a triumph for Tennessee Republicans like Sen. Bob Corker, who lured Volkswagen to Chattanooga as mayor in the early 2000s. Corker and other Republicans warned workers that the UAW's presence would irreparably harm the plant, and in recent days he claimed - with little evidence - that Volkswagen would choose not to expand the plant if workers unionized." More on POLITICO: <http://politi.co/1gcBX7c>

**Pro and con:** Corker was predictably happy, saying in a statement he was "thrilled for the employees at Volkswagen and for our community and its future." But the union's supporters were vocal - even attracting unions from other modes of transportation. "We are outraged at the shameful tactics Sen. Corker, Governor Haslam and their billionaire and special interest buddies employed to squelch the legal right of these Volkswagen workers to form a labor union," Amalgamated Transit Union International President Larry Hanley said.

**\*\*A message from POWERJobs:** Jobs on our radar this week: **Manager of Engineering** at METRO, **Policy Analyst** at SAIC and **Director of Business Development** at Evolver. Interested? Apply to these jobs and more at [www.POWERJobs.com](http://www.POWERJobs.com); finally, a career site made for YOU!\*\*

**TRANSPORTATION DEATHS UP:** Fatalities in transportation were up 3 percent in 2012 from the year before, according to early estimates from the NTSB. The safety agency tracks not only highway deaths - which accounted for around 94 percent - but also those killed on railroads, waterways and flying. Hundreds of people die every year after trying to beat a train at a rail crossing or after a boating accident - both things that the NTSB follows via DOT and DHS statistics. Marine, aviation and pipeline deaths were all down, but highway and rail deaths were up in 2012. Within the road deaths, all categories - except for buses - saw increases. In aviation, the NTSB figures show that about 96 percent of fatalities were in general aviation. More: <http://1.usa.gov/1dEHLrU>

**MUSICAL MAILBAG:** More than 30 members of Congress from both parties have written Secretary Foxx asking why the FAA hasn't put out a rule to protect musicians' instruments during flight. The letter was spearheaded by Democrat Jim Cooper, who represents Nashville - a place where music is more than a little bit important. "Countless stories have emerged over the years of musicians whose guitars, lutes, flutes and other musical instruments have been damaged because of a patchwork series of airline policies that put these fragile and valuable instruments in danger,"

the coalition wrote. The 2012 FAA bill called for a rule letting flyers buy a ticket to store the instrument in a seat or keep it in the overhead compartment - but DOT says it doesn't have the money to implement the rule that was due last week. "DOT has been working to find funding to support the regulatory evaluations required before we can issue this rulemaking, since money was not provided along with the requirement in the FAA Modernization and Reform Act of 2012," the agency said in a statement. Letter: <http://1.usa.gov/N3OqkZ>

## THE AUTOBAHN (SPEED READ)

- Small towns are worried about losing Amtrak's Southwest Chief route. New York Times: <http://nyti.ms/1cTrbjT>
- An Ethiopian Airlines plane was hijacked and flown to Geneva after the co-pilot wanted asylum. Africa Review: <http://bit.ly/1jxQSL0>
- California Lieutenant Gov. Gavin Newsom wants high-speed rail money spent elsewhere. Sac Bee: <http://bit.ly/1jxPB73>
- But the project wins a small victory with an appeals court agreeing to hear two cases. CBS: <http://cbsloc.al/1ciz3ys>
- Texas's "Teen Click It or Ticket" includes animated characters and Vine videos. TxDOT: <http://bit.ly/1e1CBBV>
- DOT officially opens comment period on potential ban on cell phone calls on airplanes. <http://1.usa.gov/1f6Nico>
- DHS is looking for a system for logging license plates with cell phone pictures. Ars Technica: <http://bit.ly/1nI9Uza> (h/t Bob King)
- TTD, AFL-CIO adopts policy statements on Norwegian Air, freight rail hours-of-service and school bus safety, among others. <http://bit.ly/1gx1nPa>

**THE COUNTDOWN:** MAP-21 expires and DOT funding runs out in 225 days. FAA policy is up in 590 days. The mid-term elections are in 259 days and the 2016 presidential election is in 994 days. MLB's Opening Day is in 41 days.

**CABOOSE - Polar vortex 1922:** It's not just the past few weeks of snow in the nation's capital. Snowed-in cars have long been a problem in Washington, as this 1922 picture of a Model T in a snowstorm shows us. Shorpy: <http://bit.ly/1oJkFVq>

**\*\*A message from POWERJobs:** Tap into the power of POWERJobs for the newest job opportunities in the Washington area from the area's top employers, including **METRO, U.S. Chamber of Commerce** and **Consumers United for Rail Equity**. Powered by names you trust - POLITICO, WTOP, WJLA/ABC-TV, NewsChannel 8 and Federal News Radio- POWERJOBS is the ultimate career site with more than **2 million job searches** and nearly **17,000 applications**

submitted this year so far. Connect through Facebook or LinkedIn, search jobs by industry and set up job-specific email alerts using [www.POWERJobs.com](http://www.POWERJobs.com), the site for Washington's top talent.\*\*

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=====.

**To:** Verify Help Desk[verifyhelp@csc.com]; Poirier, Christi[Poirier.Christi@epa.gov]  
**Cc:** Good, David[good.david@epa.gov]  
**From:** Peavyhouse, Robert  
**Sent:** Tue 2/18/2014 8:24:31 PM  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Vincent,

I thought Dave Good already responded to this or I would have already.

His response must not have included you.

This situation will happen VERY rarely. I don't think it is justified to alter or suspend the business rule.

(Especially since this is a fairly complicated one that interacts with several other BRs)

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They just need to enter the fact that they are entering the test as a duplicate and why for the test comment.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Vincent E Coleman [mailto:vcoleman2@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Tuesday, February 18, 2014 3:04 PM  
**To:** Poirier, Christi  
**Cc:** Good, David; Peavyhouse, Robert  
**Subject:** Re: 2013 VWGoA Final LDT CAFE (HLP-4928)

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We kindly request EPA feedback regarding this business rule that requires a highway test for this manufacturer's CAFE submission.

Vincent

Verify Help Desk  
Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

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Verify Help Desk---02/13/2014 12:41:02 PM---Verify Help Desk

**Verify Help Desk**

Sent by: Vincent E Coleman

02/13/2014 12:41 PM

[Tourier.christi@epa.gov](mailto:Tourier.christi@epa.gov)

[ogood.david@epa.gov](mailto:ogood.david@epa.gov), [peavyhouse.robert@epa.gov](mailto:peavyhouse.robert@epa.gov)

Subject  
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<[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

"Thomas, Richard (EEO)" <[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

02/11/2014 02:45 PM

Verify Help Desk@CSC

ctGood, David" <[good.david@epa.gov](mailto:good.david@epa.gov)>

~~Subject~~ VWGoA Final LDT CAFE

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Highway with S/S inactive configuration 1 test # DADX10022714

City with S/S active configuration 0 text # DADX10022712

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The transaction identifier following is for the whole LDT Volkswagen final CAFE. The other messages are related to the work I must get Porsche to work on and grant permissions to use their indexes. This years' CAFE will include Porsche but not for the GHG calculation.

Transaction Identifier: \_83c7d3bd-7d2a-4300-985c-afacb3ae5f45

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If you have any questions today, I am here until 3 pm.

Thanks,  
Richard

*Richard E. Thomas*

VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]  
**Cc:** Good, David[good.david@epa.gov]; Poirier, Christi[Poirier.Christi@epa.gov]  
**From:** Ex. 4 - CBI  
**Sent:** Tue 2/18/2014 8:32:29 PM  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Thank you. I will let the manufacturer know.

Ex. 4 - CBI

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Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

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"Peavyhouse, Robert" ---02/18/2014 03:24:37 PM---"Peavyhouse, Robert"  
<Peavyhouse.Robert@epa.gov>

To: Verify Help Desk@CSC, "Poirier, Christi"  
<Poirier.Christi@epa.gov>

"Peavyhouse, Robert"  
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cc: "Good, David" <good.david@epa.gov>

02/18/2014 03:24 PM

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Ex. 4 - CBI

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[REDACTED] Ex. 4 - CBI [REDACTED]

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Verify Help Desk

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The transaction identifier following is for the whole LDT Volkswagen final CAFE. The other messages are related to the work I must get Porsche to work on and grant permissions to use their indexes. This years' CAFE will include Porsche but not for the GHG calculation.

Transaction Identifier: \_83c7d3bd-7d2a-4300-985c-afacb3ae5f45

**Transaction Message Text :** LD-FE-CA-BR167 - If a subconfiguration contains a Test Number (CA-35) and the corresponding FE Label contains a Drive Source (GL-13.5.1) equal to 'C' (Combustion Engine), then within that subconfiguration, each unique combination of

Vehicle ID (TI-4), Vehicle Configuration Number (TI-5), and Averaging Group Indicator (CA-41) must contain at least one test with a 5-Cycle Test Category (TI-45) equal to 'HWY' (Test Procedure equal to 3).(Model Type Index = 106 Base Level Inertia Class = 4500 Configuration Index = 1 SubConfiguration Index = 1)

If you have any questions today, I am here until 3 pm.

Thanks,  
Richard

*Richard E. Thomas*

VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Bunker, Byron[bunker.byron@epa.gov]  
**From:** Truck Fleet Management  
**Sent:** Tue 2/18/2014 9:14:56 PM  
**Subject:** TFM Report: Obama Details MPG Plan for Trucks

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Feb. 18, 2014

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**Obama Details MPG Plan for Trucks**

**First Look: Chevrolet City Express**

**Toyota Recalls Tundra Pickups**

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**Obama Details MPG Plan for Trucks**

**President Obama is giving federal agencies slightly more than one year to draft a rule proposal that would boost fuel economy and tighten greenhouse-gas emissions for medium- and heavy duty trucks.**

**First Look: Chevrolet City Express**

**PAYSON, Ariz. – The forthcoming Chevrolet City Express small van was on display here during a press preview for General Motors' redesigned heavy duty pickups.**

**Scroll down for more stories.**

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**Toyota Recalls Tundra Pickups**

**Toyota is recalling 294,000 vehicles in North and South America for a skid-control software glitch, the Associated Press reported.**

**Ram Recalls ProMaster Vans**

**Chrysler Group is recalling some Ram ProMaster vans to address the potential for accelerator pedals to stick open in certain situations, the National Highway Traffic Safety Administration announced.**

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**Ford Adds Plow Kit to New F-150**

**Ford Motor Co. announced the availability of a snow plow prep option across all cab configurations on the redesigned 2015 F-150 pickup.**

**Rush Profits Rise in 4Q**

**Truck dealer chain Rush Enterprises Inc. said its net income increased slightly in the fourth quarter, but its sales of Class 8 trucks declined in 2013.**

## More News Below

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### VW Workers Reject Union

**Workers at a Volkswagen factory in Tennessee have rejected the United Auto Workers union, the Associated Press reported.**

### Technologies Track Stolen Equipment

**General Motors Co. and Isuzu will invest \$60 million to update the factory where they jointly produce Duramax diesel engines, GM said in a statement. Hundreds of millions of dollars' worth of equipment is stolen annually from construction sites, but technologies that track and locate heisted machines can help protect builders from falling prey to criminals, industry executives said.**

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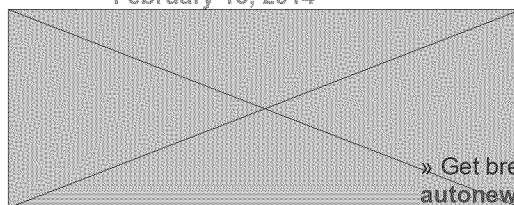
Suite 210, Arlington, VA 22203

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 2/18/2014 9:38:30 PM  
**Subject:** DAILY: Dealers order more than 8,000 diesel-powered Ram 1500s in 3 days | Tesla stock hits new high | Why the UAW can only blame itself for losing at VW

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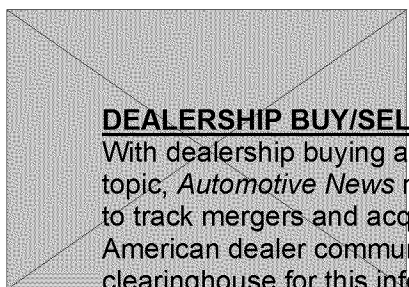
**Fat profits put 2-tier pay on UAW agenda**

February 18, 2014



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**TOP NEWS**

**Dealers order more than 8,000 diesel-powered Ram 1500s in 3 days**

3:55 pm U.S. ET | Feb 18

Chrysler Group dealers ordered more than 8,000 diesel-powered Ram 1500 pickups in the first weekend that they could do so -- a figure that represents nearly half of the light-duty pickup's normal monthly production. ...

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**Tesla stock hits new high on Apple rumors**

UPDATED: 2/18/14 4:21 pm ET - adds stock close

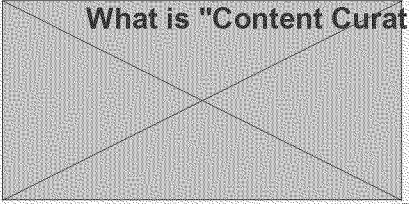
3:40 pm U.S. ET | Feb 18

Tesla Motors shares traded at a record high today amid speculation about the nature of a 2013 meeting between

the electric-car maker's CEO, Elon Musk, and Apple's head of mergers and acquisitions, four analysts said. ...  
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What is "Content Curation" Anyway?



Ninety percent of dealerships understand that content marketing is a priority, but almost half say it represents less than 10% of their marketing budget. IMN helps curate content like the big boys. [Curation vs. Plagiarism.](#)

### **THE VOLKSWAGEN VOTE**

## **Conservative group's anti-union effort to target more U.S. plants**

8:39 pm U.S. ET | Feb 17

The Center for Worker Freedom, a conservative group that helped defeat an organizing campaign by the UAW in Tennessee, will take its anti-union fight to other auto plants in the South, its leaders said on Monday. ...

[» READ](#)

### **THE VOLKSWAGEN VOTE**

## **UAW regroups after stinging VW setback**

UPDATED: 2/16/14 4:42 pm ET

12:34 am U.S. ET | Feb 16

The UAW could be forced to reconsider its efforts to organize workers at foreign-owned factories in the U.S., labor experts say, as the union vowed to keep fighting after losing a closely watched vote at VW's Tennessee plant. ... [» READ](#)

### **THE VOLKSWAGEN VOTE**

## **VW to build SUV in Tennessee, Corker reasserts**

2:45 pm U.S. ET | Feb 15

U.S. Sen. Bob Corker on Saturday doubled down on his claim that Volkswagen AG will build a new mid-sized SUV at its assembly plant in Tennessee now that the UAW has been turned away. ... [» READ](#)

## **U.S. dealership count remains flat, throughput soars**

2:00 pm U.S. ET | Feb 17

**ON THE BLOGS**



The number of dealerships in the United States last year remained relatively flat, with pockets of increases. But with a recovering economy driving sales higher, the average number of new-vehicle sales per dealership surged, according to a study released today by Urban Science. ... » [READ](#)

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[Viral video rankings for week of 2/18/2014](#)  
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12:01 am U.S. ET | Feb 18

Chevrolet gets emotional in the newest spot to crack our weekly auto brand viral video rankings. ... » [Watch the videos](#)

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12:01 am U.S. ET | Feb 16

**Chrysler extends fuel tank  
warranty on 154,000 old cars;  
NHTSA probe ends**

5:45 pm U.S. ET | Feb 14

**Journey Crossroad expected to  
attract awd fans**

12:01 am U.S. ET | Feb 16

**Fiat faces hurdles to accessing  
Chrysler cash after merger**

6:59 am U.S. ET | Feb 17

**Hyundai vice chairman to tour  
U.S. operations this week**

UPDATED: 2/18/14 3:52 pm ET

11:03 pm U.S. ET | Feb 17

**Obama sets March 2016 goal for  
truck fuel efficiency rules**

2:04 pm U.S. ET | Feb 18

**Sunken sports cars need an  
ambulance; GM will help**

12:01 am U.S. ET | Feb 16

**Fisker wins approval to sell  
assets to China's Wanxiang**

12:18 pm U.S. ET | Feb 18

**Why Australia's auto industry is  
going the way of the dodo**

12:01 am U.S. ET | Feb 15

**Audio system gives smaller  
engines a V-8 vroom**

12:01 am U.S. ET | Feb 15

**Mazda plans small SUV, report  
says**

5:38 am U.S. ET | Feb 17

**Mitsubishi aims to beat  
profitability forecast by ending**

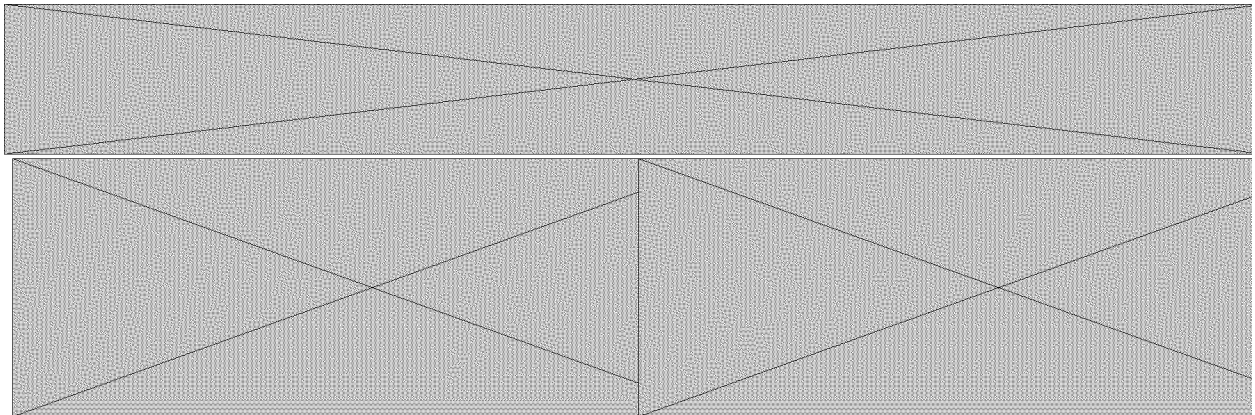
## **N.A., Japan losses**

6:40 am U.S. ET | Feb 18



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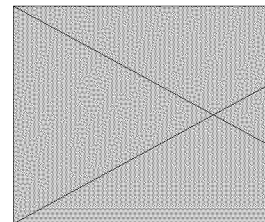
**Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207**

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** WardsAuto OEM Edition  
**Sent:** Wed 2/19/2014 9:00:29 AM  
**Subject:** CNG Gains Traction With Fleets; Retail Market Dims

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February 19, 2014



## Light Traffic Ahead on Road to Self-Driving Cars

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Cybersecurity has emerged as key concern, and industry players also must work together more closely than they have historically, experts say.

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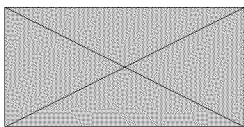
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### WHITEPAPER

This white paper details how to anticipate and mitigate the risks of potential supply chain disruptions. Using five out-of-the-ordinary scenarios, it describes what can be done to prepare for disruptions and how to mitigate their effects after the event.

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## Toyota Tundra Set to Receive Cummins Diesel

Toyota's fullsize pickup will get a version of the 5.0L turbodiesel V-8 coming in competitor Nissan's Titan truck.

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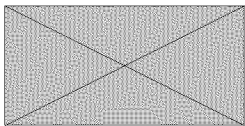
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## Ssangyong Eyes U.S. Market as Comeback Continues

A spokesman confirms the automaker plans a product portfolio for North America and has hired a consultant to help it find a more palatable corporate and brand name. The aim is to describe a product with quality, vigor and a long future.

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The U.S. LV market will reach 16 million units this year and, along with the market expansion, we will see Toyota become the No.2 vehicle brand.

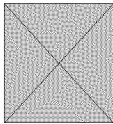
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## **CNG Gaining Traction With Fleets, But Retail Market Dimming**

While the fuel is becoming popular as an alternative to gasoline for fleet vehicles, the number of CNG-powered cars on the road remains minuscule, and that's unlikely to change unless the number of CNG fueling stations increases.

[FULL ARTICLE](#)

## **Another One Bites the Dust, Unfairly**



### **FINAL INSPECTION BLOG**

Hyundai-Kia parts way with yet another executive, but he didn't have much to work with.

[FULL ARTICLE](#)

## **Mazda Says Quality From Mexico Plant Good; Rotary 'Pulse' Still There**

Line speed gradually is increasing, and the first Mazda3s from Salamanca should arrive in the U.S. in late February or early March.

[FULL ARTICLE](#)

## **WardsAuto Flashback**

UAW Split Brewing; 1938 Exports Rise; Post-War Gas Crunch; Packard Retools; Chrysler Hemi Bows and Yugo Gets Cash

[FULL ARTICLE](#)

## **Mazda: 100,000 CX-5s Within Reach; Smaller CUV Studied**

Hitting the 100,000-mark with the CX-5 would put the automaker in rarefied company, joining others with small CUVs reaching or surpassing the figure, including the Toyota RAV4, Nissan Rogue, Ford Escape and Honda CR-V.

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## **Gallery: GM Celebrates Ward's 10 Best**

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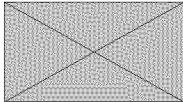


## **Engines Honors**

General Motors Powertrain headquarters in Pontiac, MI, this week hosted a celebration to commemorate the automaker's two trophies as part of the 2014 Ward's 10 Best Engines competition.

[FULL ARTICLE](#)

## **VideoWire**



Sinkhole Aftermath at Corvette Museum; Works Council in Works for VW Plant

## **Obama to Order Higher Fuel-Efficiency Targets for U.S. Trucks**

Obama set a March 2016 deadline for the EPA and the Department of Transportation to develop new fuel-efficiency standards for medium and heavy-duty trucks.

[FULL ARTICLE](#)

## **Skoda Rolling Out Updated Scout CUV at Geneva**

The Scout comes with the Haldex permanent all-wheel-drive system already available in the Octavia Wagon, but with a higher suspension setting and 17-in. wheels.

[FULL ARTICLE](#)

## **WardsAuto Poll**

What's the next best step for the UAW? Vote in our latest poll.

## **GM Thailand Reaches Production Milestone**

The Rayong plant which built its 1 millionth vehicle this week, exported a record 44,000 vehicles last year to 77 countries.

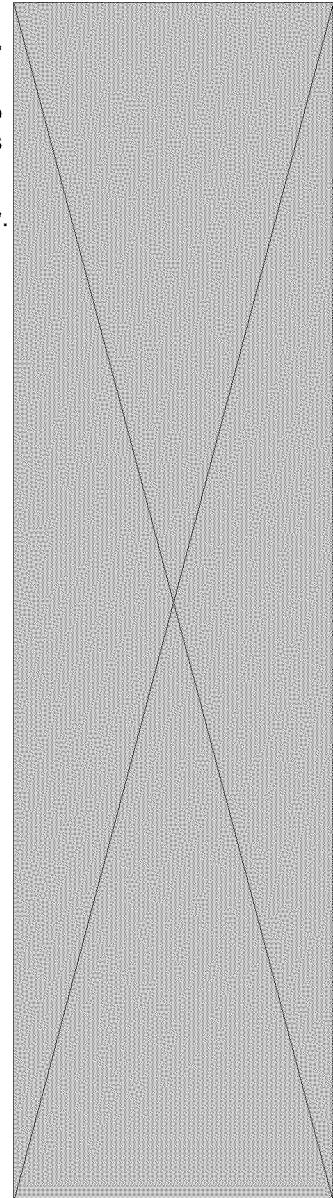
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## **Qoros to Unveil Second Model at Geneva**

## **Renault Revives Rear-Mounted Powertrain in New Twingo**

The 3 Hatch looks even better-balanced than the 3 Sedan, thanks in part to its unusually long wheelbase and wider stance that outdistance competitors such as the Volkswagen Golf and Mercedes B-Class. Renault's Twin Z and Twin Run concepts have been displayed at several events since March 2013, but the successor to the 20-year-old Twingo will be revealed in its production-ready form at next month's Geneva auto show.

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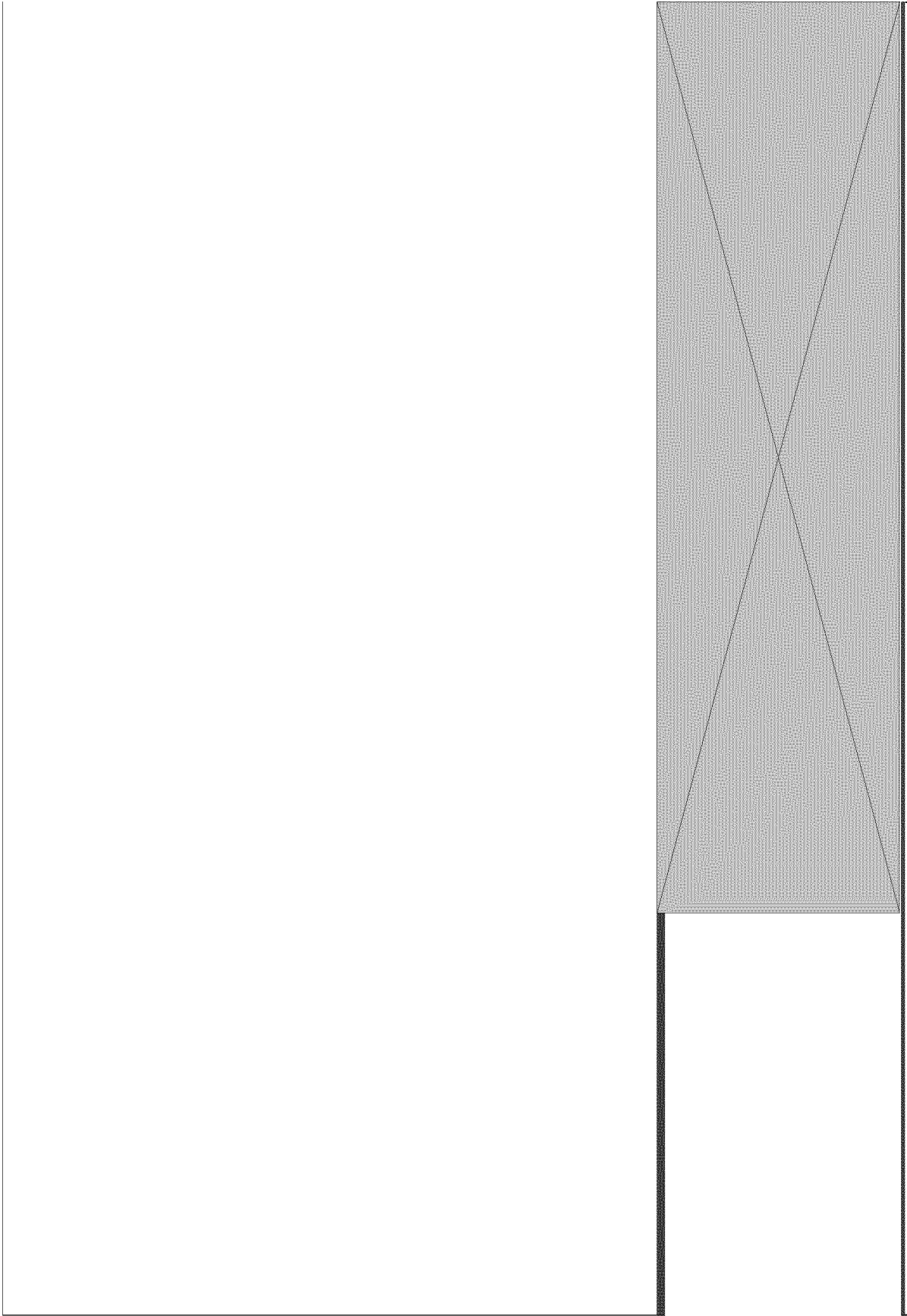
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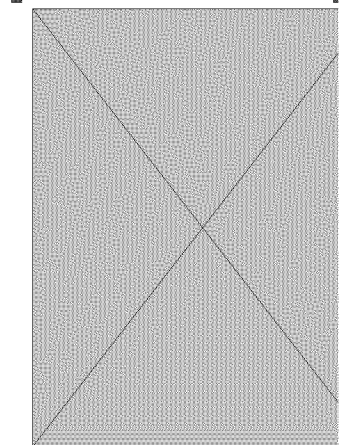
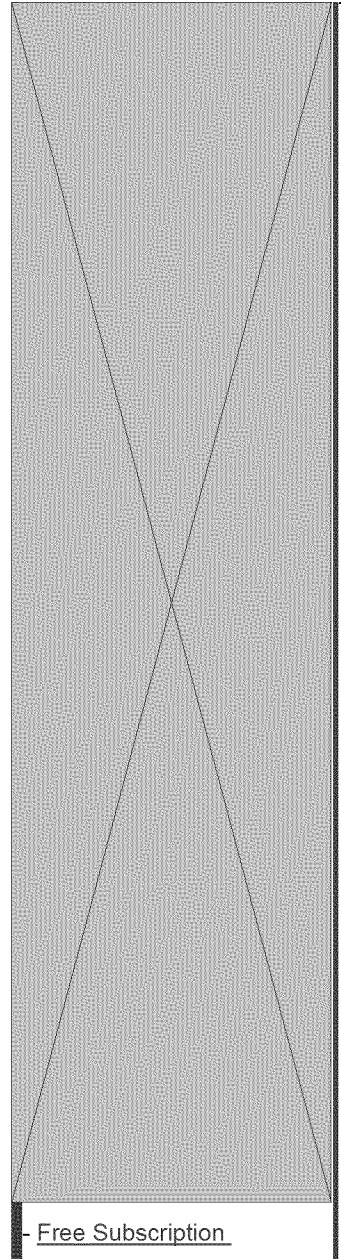
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This white paper details how to anticipate and mitigate





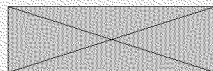
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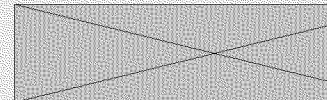
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**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Wed 2/19/2014 1:18:22 PM  
**Subject:** FW: 2013 VWGoA Final LDT CAFE (HLP-4928)

Can we discuss?

**From:** [Ex. 4 - CBI]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Tuesday, February 18, 2014 3:56 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

The EPA has indicated that you can enter a duplicate test under the corresponding Test Vehicle and Test Vehicle configuration to satisfy the following business rule requiring a HWY test. You will just need to enter the fact that you are entering the test as a duplicate and why for the test comment.

**Transaction Message Text :** LD-FE-CA-BR167 - If a subconfiguration contains a Test Number (CA-35) and the corresponding FE Label contains a Drive Source (GL-13.5.1) equal to 'C' (Combustion Engine), then within that subconfiguration, each unique combination of Vehicle ID (TI-4), Vehicle Configuration Number (TI-5), and Averaging Group Indicator (CA-41) must contain at least one test with a 5-Cycle Test Category (TI-45) equal to 'HWY' (Test Procedure equal to 3).(Model Type Index = 106 Base Level Inertia Class = 4500 Configuration Index = 1 SubConfiguration Index = 1)

Ex. 4 - CBI

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"Thomas, Richard (EEO)" ---02/13/2014 02:25:21 PM---"Thomas, Richard (EEO)"  
<Richard.Thomas@vw.com>

"Thomas, Richard (EEO)" <Richard.Thomas@vw.com>

02/13/2014 02:25 PM

Verify Help Desk@CSC

cc

~~Subject~~ RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Okay, yeah I tried it...it did not help.

**From:** [REDACTED] **Ex. 4 - CBI** [REDACTED]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Thursday, February 13, 2014 1:45 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** Giles, Michael (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We don't believe so. Two vehicles are referenced in your FE Label and because one of the vehicles does not have a HWY test this business rule is being returned.

[REDACTED] **Ex. 4 - CBI**

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▼ "Thomas, Richard (EEO)" ---02/13/2014 12:44:59 PM---"Thomas, Richard (EEO)"  
<Richard.Thomas@vw.com>

"Thomas, Richard (EEO)" <Richard.Thomas@vw.com>

02/13/2014 12:44 PM

ToVerify Help Desk@CSC

cc"Giles, Michael (EEO)" <michael.giles@vw.com>

SubjectRE: 2013 VWGoA Final LDT CAFE (HLP-4928)



Is there something I might have to do with average grouping and/or percentage of average for the two city tests with different configuration numbers maybe? I'm going to try a couple scenarios.

**From:** [Ex. 4 - CBI]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Thursday, February 13, 2014 12:43 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** Giles, Michael (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We looked into this issue and are consulting with the EPA. I will let you know as soon as we have an update.

[Ex. 4 - CBI]

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▼ "Thomas, Richard (EEO)" ---02/12/2014 12:35:09 PM---"Thomas, Richard (EEO)"  
<[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

"Thomas, Richard (EEO)" <[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

02/12/2014 12:35 PM

ToVerify Help Desk@CSC

cc"Giles, Michael (EEO)" <[michael.giles@vw.com](mailto:michael.giles@vw.com)>

SubjectRE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Thanks Vince,

I am down to only that one error message now; here is the Transaction Identifier: \_42272ae2-e29a-4e55-8074-ad7bcf8df706.

**From:** [Ex. 4 - CBI]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Wednesday, February 12, 2014 11:17 AM  
**To:** Thomas, Richard (EEO)  
**Cc:** Good, David  
**Subject:** Re: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We are looking into this issue and will get back to you shortly.

[Ex. 4 - CBI]

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Contractor to the Environmental Protection Agency

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☞ "Thomas, Richard (EEO)" ---02/11/2014 02:46:05 PM---"Thomas, Richard (EEO)"  
<Richard.Thomas@vw.com>


"Thomas, Richard (EEO)" <Richard.Thomas@vw.com>

02/11/2014 02:45 PM

ToVerify Help Desk@CSC

cc"Good, David" <good.david@epa.gov>

Subject2013 VWGoA Final LDT CAFE

Hello 

I am having trouble identifying what the problem is on the below message (BR167). The 2013 CAFE will be generated under VWX manufacturer code. This Audi model type index 106, has two city tests and one highway test numbers listed. Listed under different configuration numbers. See below:

City with S/S inactive configuration 1 test # DADX10022713

Highway with S/S inactive configuration 1 test # DADX10022714

City with S/S active configuration 0 test # DADX10022712

EPA allowed us to perform testing with the stop/start system active for only the city and US06 tests because the system does not allow the engine to stop during the other 5-cycle tests (i.e.: SC03, Cold FTP, and Highway). I think Verify is looking for a highway test in the configuration 0 (S/S active). It was successfully labeled in 2013 this way.

The transaction identifier following is for the whole LDT Volkswagen final CAFE. The other messages are related to the work I must get Porsche to work on and grant permissions to use their indexes. This years' CAFE will include Porsche but not for the GHG calculation.

Transaction Identifier: \_83c7d3bd-7d2a-4300-985c-afacb3ae5f45

**Transaction Message Text :** LD-FE-CA-BR167 - If a subconfiguration contains a Test Number (CA-35) and the corresponding FE Label contains a Drive Source (GL-13.5.1) equal to 'C' (Combustion Engine), then within that subconfiguration, each unique combination of Vehicle ID (TI-4), Vehicle Configuration Number (TI-5), and Averaging Group Indicator (CA-41) must contain at least one test with a 5-Cycle Test Category (TI-45) equal to 'HWY' (Test Procedure equal to 3).(Model Type Index = 106 Base Level Inertia Class = 4500 Configuration Index = 1 SubConfiguration Index = 1)

If you have any questions today, I am here until 3 pm.

Thanks,  
Richard

*Richard E. Thomas*

VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Morning Transportation  
**Sent:** Wed 2/19/2014 3:06:06 PM  
**Subject:** POLITICO's Morning Transportation, presented by POWERJobs: Biden makes port visit to celebrate stimulus — Trucking industry wary of fuel efficiency push

By Adam Snider

**BIDEN'S IM-PORT-ANT VISIT:** Vice President Joe Biden and other top officials tour America's Central Port today before the veep gives a speech about the importance of transportation spending as the 2009 stimulus package celebrates its fifth birthday. The port along the Mississippi River in Granite City, Ill., got nearly \$15 million for South Harbor, which St. Louis Public Radio describes (<http://bit.ly/1htgQCX>) as "a shipping hub for agricultural goods and other commodities that's expected to open later this fall." Transportation Secretary Anthony Foxx and former DOT head Ray LaHood will also be on hand for the event that starts at 1 p.m. for us East Coasters.

**OBAMA PUSHING TRUCK FUEL EFFICIENCY ... AGAIN:** President Barack Obama went to Maryland yesterday to tout his plan for better fuel efficiency in medium and heavy-duty trucks, but the industry is skeptical of another effort. The White House wants EPA and DOT to put out a rule by March 2015 for enactment a year later, and Obama is promoting it as another thing he can do without Congress, a recent theme of his. Erica Martinson has more on POLITICO: <http://politi.co/O5KuBs>

**Industry worried:** Groups representing both big companies and independent drivers are wary of the new set of rules. OOIDA said it would drive up costs for small-business drivers. "Shock and awe may be the best way to describe what's happening to the vast majority in trucking with these proposed regulations," OOIDA executive VP Todd Spencer said. "We stood shoulder-to-shoulder with the President and his administration in 2011 when the historic first fuel efficiency standards were set for heavy-duty vehicles," ATA President Bill Graves said. "As we begin this new round of standards, ATA hopes the administration will set forth a path that is both based on the best science and research available and economically achievable."

**FIRST IN MT - Beth Osborne joins T4 consulting group:** Transportation for America announces today that it has hired key DOT official Beth Osborne to lead a new "mission-driven consulting service," which the group says includes "directing the organization's on-the-ground work with the local communities seeking to invest in the infrastructure required for their - and the country's - continued economic prosperity." Osborne was deputy assistant secretary and acting assistant secretary for policy in her time at DOT. "We couldn't be more thrilled to welcome an expert like Beth to our team," said T4 Director James Corless. Osborne said she's "eager to be a part of helping motivated local communities turn their ambitious transportation plans and visions into reality. It's not easy to make projects happen in this climate today and I look forward to being a part of their success."

**WEDNESDAY, FEBRUARY 19.** Thanks for reading POLITICO's Morning Transportation, your daily tipsheet on trains, planes, automobiles and ports, where today we're celebrating the 1473 birth of Nicolaus Copernicus, who upended astronomical assumptions and started a

revolution by putting the sun, not the Earth, at the center of the solar system. Please be in touch: [asnider@politico.com](mailto:asnider@politico.com). And follow me on Twitter: @AdamKSnider.

"We fell in love on a trip on a Greyhound bus ... " <http://bit.ly/1gWRmsW> (h/t Matthew Cahill)

**HIGHWAY TO HELL (FOR THE TRUST FUND):** The Highway Trust Fund is in bad shape - and DOT is here to remind us once a month just how bad things are. In its latest update, the agency still estimates a highway account shortfall in early August - meaning Congress could have to act around two months before MAP-21 expires at the end of September. "The surface transportation program continues to outlay at a greater pace than receipts are coming in," DOT warns. Another thing that didn't help: sequestration, which shaved \$700 million off of what was due to the Highway Trust Fund. MAP-21 authorized a \$10.4 billion general fund transfer, but the fund only got \$9.7 billion after the automatic spending cuts. The highway account closed January with \$8.3 billion, but that won't last long with the summer construction boom is right around the corner. The transit account will barely - to the tune of \$440 million - avoid bankruptcy before the end of the fiscal year in September, DOT says. <http://1.usa.gov/1eKPPqC>

**MORE STAFF MOVES - LaHood joins Proterra board:** Former Transportation Secretary Ray LaHood has joined the Board of Directors of electric bus maker Proterra. It's yet another gig for LaHood, who's been staying busy post-DOT with his work at Building America's Future and at DLA Piper. Proterra, based in Greenville, S.C., boasts that it "is the only U.S.-based manufacturer of EV transit buses and, despite the market entrance of foreign competitors, the only manufacturer to have buses in revenue service in the United States or to have passed stringent federally-required Altoona testing."

**A promotion at GHSA:** Jonathan Adkins is officially the new executive director at the Governors Highway Safety Association, the group announced on Tuesday after a nationwide search. Adkins has been with GHSA for 14 years, starting as communications director, and moving all the way up to now succeed long-time ED Barbara Harsha. "Jonathan has been an important factor in GHSA's success over the last decade," GHSA Chairman Kendell Poole said.

**\*\*A message from POWERJobs:** Jobs on our radar this week: **Manager of Engineering** at METRO, **Policy Analyst** at SAIC and **Director of Business Development** at Evolver. Interested? Apply to these jobs and more at [www.POWERJobs.com](http://www.POWERJobs.com); finally, a career site made for YOU!\*\*

**NTSB MAKES METRO-NORTH RECOMMENDATIONS:** The federal transportation safety agency has two key recommendations for Metro-North in the wake of last year's fatal crash: Install cameras and improve speed limit signage. In a letter to Metro-North President Joseph Giulietti, NTSB Chairwoman Deborah Hersman spelled out the benefits of cameras facing both inward (toward the driver) and outward (toward the track). "The NTSB continues to believe that inward- and outward-facing audio and image recorders improve the quality of accident investigations and provide the opportunity for proactive steps by railroad management to improve operational safety," Hersman wrote. She also recommended that Metro-North beef up its speed limit signage, praising the actions the railroad has taken so far but saying more needs to be done. Letter: <http://1.usa.gov/N7bUFM>

**Metro-North response:** "The safety and security of our customers is Metro-North's most important concern, and it is a concern we share with the NTSB. We have received the NTSB's recommendations and we are studying them closely. Metro-North is working with the NTSB to address questions about implementation of the report's recommendations," an MTA spokesman said.

**TROUBLE IN THE SKIES:** It wasn't the best day for United Airlines, which saw both computer glitches that delayed planes along with severe turbulence on a flight. Flyers complained of delays and boarding issues after a computer problem on Tuesday, on top of previous weather-related delays (Chicago Sun-Times: <http://bit.ly/1oPWYL9>). And several people were injured after major turbulence on a flight from Denver to Montana (Fox News: <http://fxn.ws/MxT1Mg>).

### **THE AUTOBAHN (SPEED READ)**

- The VW vote was "Labor's WTF Moment." POLITICO Magazine: <http://politi.co/1cop6Qb>
- NJ Transit head Jim Weinstein will leave the agency by month's end; N.J. Turnpike Authority leader Veronique "Ronnie" Hakim will replace him. Transportation Nation: <http://wny.cc/1cnw5c3>
- Reagan National Airport saw 20.4 million passengers in 2013, the third straight yearly record. Washington Post: <http://wapo.st/1jPP0kC>
- Boeing says it will build the wings for its new 777X in Everett, Wash. The AP: <http://bit.ly/1oOLjfl>
- Hydrogen-fueled cars raise safety issues in California. ProPublica: <http://bit.ly/1hsDHOQ>
- The stock market value for Tesla Motors broke the \$25 billion mark yesterday. WaPo: <http://wapo.st/1ms5rpf> (h/t Alex Guillen)
- Smart Growth America names the best complete streets policies of 2013: <http://bit.ly/1e5jEhC>
- New York City Mayor Bill de Blasio unveils "Vision Zero" plan to cut pedestrian fatalities. <http://on.nyc.gov/1kUnthW>

**THE DAY AHEAD:** 9 a.m. - General Services Administration holds a teleconference meeting of the Government-Wide Travel Advisory Committee to discuss rental cars (passenger vehicles) and sustainability of federal travel.

10 a.m. - FRA holds a hearing on the Association of American Railroads' request for a waiver of compliance from certain provisions of Title 49 Code of Federal Regulations Part 232, Brake System Safety Standards for Freight and Other Non-Passenger Trains and Equipment; specifically regarding 1,000-mile break test inspections to demonstrate the effectiveness of using

wayside wheel temperature detector data to ensure safe braking performance. National Association of Home Builders, 1201 15th Street NW, National Housing Center.

1 p.m. - Vice President Joe Biden, Transportation Secretary Anthony Foxx and former Secretary Ray LaHood visit America's Central Port to mark the fifth anniversary of the American Recovery and Reinvestment Act and highlight the need for continued investment in infrastructure to create jobs and grow the economy. Granite City, Ill.

**MUST-WATCH - Driving the day:** POLITICO insiders Alex Burns, Anna Palmer, Manu Raju and Jake Sherman relaunch this classic POLITICO video series, taking you behind-the-scenes of what's driving the day's headlines every Tuesday - Thursday morning. Get the scoop on what Washington is thinking and how it affects the Beltway and beyond at <http://politi.co/1bk54YO>

**THE COUNTDOWN:** MAP-21 expires and DOT funding runs out in 224 days. FAA policy is up in 589 days. The mid-term elections are in 258 days and the 2016 presidential election is in 993 days. MLB's Opening Day is in 40 days.

**CABOOSE - Sailing drone:** Wired takes a look at the next drone frontier - crafts that can sail around the world. "But scientific and security uses are just the beginning. The biggest impact might be to industry: oil and gas, gold mining, diamond mining, fisheries, shipping, military. For all kinds of reasons - regulatory, exploratory, classified - those industries need to know what is happening in the vast, nearly invisible reaches of the world's oceans." Wired has the story: <http://wrd.cm/1ffxUJs>

**OOPS:** Yesterday's MT incorrectly referred to an out-of-date agenda for a Maryland gubernatorial debate; Attorney General Doug Gansler did indeed participate in last night's event on transportation, and MT regrets the error.

**\*\*A message from [POWERJobs](#):** Tap into the power of POWERJobs for the newest job opportunities in the Washington area from the area's top employers, including **METRO, U.S. Chamber of Commerce and Consumers United for Rail Equity**. Powered by names you trust - POLITICO, WTOP, WJLA/ABC-TV, NewsChannel 8 and Federal News Radio- POWERJOBS is the ultimate career site with more than **2 million job searches** and nearly **17,000 applications** submitted this year so far. Connect through Facebook or LinkedIn, search jobs by industry and set up job-specific email alerts using [www.POWERJobs.com](http://www.POWERJobs.com), the site for Washington's top talent.\*\*

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<http://www.politico.com/morningtransportation/0214/morningtransportation13050.html>

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=====.



**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Snyder, Jim  
**Sent:** Wed 2/19/2014 11:20:02 PM  
**Subject:** RE: VW Group Certification Priorities

Okay I looked some more and found the AECD descriptions are indeed in all 3 Part 1 applications. Still probably good to correct the incomplete AECD description in the Common document. Right now our printer network is down so I can't send you an approved copy anyway. I'll find a personal printer tomorrow if not resolved.

**From:** Snyder, Jim  
**Sent:** Wednesday, February 19, 2014 4:58 PM  
**To:** 'Rodgers, William (EEO)'  
**Subject:** RE: VW Group Certification Priorities

Bill, I left you a voice mail regarding the SCR/AECD document, 2015\_CBI\_FVGA\_COMMON\_RFA\_SCR, missing most of the AECD attachment, but I also just noticed the first page lists NU2 twice on the cover page instead of NU3. Can you get that corrected too?

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Rodgers, William (EEO) [<mailto:William.Rodgers@vw.com>]  
**Sent:** Monday, February 17, 2014 3:23 PM  
**To:** Snyder, Jim  
**Cc:** Allen, Gregory; Giles, Michael (EEO)  
**Subject:** VW Group Certification Priorities

Hello Jim,

Over the last weeks two we have uploaded several 2015 model year Initial Applications/Certification Requests and an SCR/AECD approval request letter for review. For purposes of prioritization I've provided the following workflows in order of priority depending on start of production and launch importance:

1) Pending submitted;	2015_CBI_FVGA_COMMON_RFA_SCR Related to the following 3.0L diesel test groups	Feb 17, 2014
2) Pending submitted;	2015_CBI_FVGAJ03.0NU4_APP_INI_ Start of production May 17, 2014	Feb 13, 2014
3) Pending submitted;	2015_CBI_FVGAV04.0NUA_APP_INI_ Start of production May 17, 2014	Feb 6, 2014
4) Pending submitted;	2015_CBI_FVGAT03.0NU3_APP_INI_ Start of production May 17, 2014	Feb 17, 2014
5) Pending submitted;	2015_CBI_FVGAT03.0NU2_APP_INI_ Start of production May 26, 2014	Feb 17, 2014

There are many more applications to come related to the normal start of production dates of May 26, 2014. Please let me know if there are any questions.

Bill Rodgers

VWGoA EEO

(248) 754-4219

**Cc:** Nic Lutsey[nic@theicct.org]; Anup Bandivadekar[anup@theicct.org]; John German[john@theicct.org]  
**To:** Grundler, Christopher[grundler.christopher@epa.gov]; Charmley, William[charmley.william@epa.gov]  
**From:** Drew Kodjak  
**Sent:** Thur 2/20/2014 1:28:35 AM  
**Subject:** Request for Information from US EPA Trends Report  
[US LDV Data sharing request memo v1.docx](#)  
[ATT00001.htm](#)

Dear Chris and Bill,

The attached memo requests the underlying data connected to US EPA's certification and technology trends data that underlies compliance with the US light duty vehicle greenhouse gas (GHG) emissions regulations.

There are two primary objectives: (1) to allow improved analysis of technology and emission trends related to GHG regulation compliance and (2) to inform the mid-term evaluation process.

The ICCT and other groups would need this data in hand by about August 1, 2014 in order to develop a research plan for the mid-term evaluation.

Thank you for your consideration of this important request.

Drew

**To:** Verify Help Desk[verifyhelp@csc.com]  
**Cc:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Thur 2/20/2014 12:55:11 PM  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Thank you [Ex. 4 - CBI];

We went ahead and created duplicate tests for these 2013 CAFE/GHG reports and now both PC and LDT VWGoA reports have been accepted into Verify. Now we begin to make corrects to the fleet average and standard calculations.

Best regards,

Richard

**From:** [Ex. 4 - CBI]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Tuesday, February 18, 2014 3:56 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

The EPA has indicated that you can enter a duplicate test under the corresponding Test Vehicle and Test Vehicle configuration to satisfy the following business rule requiring a HWY test. You will just need to enter the fact that you are entering the test as a duplicate and why for the test comment.

**Transaction Message Text :** LD-FE-CA-BR167 - If a subconfiguration contains a Test Number (CA-35) and the corresponding FE Label contains a Drive Source (GL-13.5.1) equal to 'C' (Combustion Engine), then within that subconfiguration, each unique combination of Vehicle ID (TI-4), Vehicle Configuration Number (TI-5), and Averaging Group Indicator (CA-41) must contain at least one test with a 5-Cycle Test Category (TI-45) equal to 'HWY' (Test Procedure equal to 3).(Model Type Index = 106 Base Level Inertia Class = 4500 Configuration Index = 1 SubConfiguration Index = 1)

[Ex. 4 - CBI]

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▼ "Thomas, Richard (EEO)" ---02/13/2014 02:25:21 PM---"Thomas, Richard (EEO)"  
<Richard.Thomas@vw.com>

"Thomas, Richard (EEO)" <Richard.Thomas@vw.com>

02/13/2014 02:25 PM

Verify Help Desk@CSC

cc

Subject: 2013 VWGoA Final LDT CAFE (HLP-4928)

Okay, yeah I tried it...it did not help.

**From:** [REDACTED] Ex. 4 - CBI [REDACTED]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Thursday, February 13, 2014 1:45 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** Giles, Michael (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We don't believe so. Two vehicles are referenced in your FE Label and because one of the vehicles does not have a HWY test this business rule is being returned.

[REDACTED] Ex. 4 - CBI [REDACTED]

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▼ "Thomas, Richard (EEO)" ---02/13/2014 12:44:59 PM---"Thomas, Richard (EEO)"

<Richard.Thomas@vw.com>

"Thomas, Richard (EEO)" <Richard.Thomas@vw.com>

02/13/2014 12:44 PM

ToVerify Help Desk@CSC

cc"Giles, Michael (EEO)" <michael.giles@vw.com>

SubjectRE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Is there something I might have to do with average grouping and/or percentage of average for the two city tests with different configuration numbers maybe? I'm going to try a couple scenarios.

**From:** [Ex. 4 - CBI]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Thursday, February 13, 2014 12:43 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** Giles, Michael (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We looked into this issue and are consulting with the EPA. I will let you know as soon as we have an update.

[Ex. 4 - CBI]

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Contractor to the Environmental Protection Agency

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▼ "Thomas, Richard (EEO)" ---02/12/2014 12:35:09 PM---"Thomas, Richard (EEO)"  
<Richard.Thomas@vw.com>

"Thomas, Richard (EEO)" <Richard.Thomas@vw.com>

02/12/2014 12:35 PM

To: Verify Help Desk@CSC

cc: "Giles, Michael (EEO)" <[michael.giles@vw.com](mailto:michael.giles@vw.com)>

Subject: RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Thanks Ex. 4 - CBI

I am down to only that one error message now; here is the Transaction Identifier: \_42272ae2-e29a-4e55-8074-ad7bcf8df706.

**From:** Ex. 4 - CBI @csc.com **On Behalf Of** Verify Help Desk  
**Sent:** Wednesday, February 12, 2014 11:17 AM  
**To:** Thomas, Richard (EEO)  
**Cc:** Good, David  
**Subject:** Re: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We are looking into this issue and will get back to you shortly.

Ex. 4 - CBI

Verify Help Desk  
Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

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<[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

"Thomas, Richard (EEO)" <[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

02/11/2014 02:45 PM

ToVerify Help Desk@CSC

cc"Good, David" <[good.david@epa.gov](mailto:good.david@epa.gov)>

Subject2013 VWGoA Final LDT CAFE



Hello Ex. 4 - CBI

I am having trouble identifying what the problem is on the below message (BR167). The 2013 CAFE will be generated under VWX manufacturer code. This Audi model type index 106, has two city tests and one highway test numbers listed. Listed under different configuration numbers. See below:

City with S/S inactive configuration 1 test # DADX10022713

Highway with S/S inactive configuration 1 test # DADX10022714

City with S/S active configuration 0 text # DADX10022712

EPA allowed us to perform testing with the stop/start system active for only the city and US06 tests because the system does not allow the engine to stop during the other 5-cycle tests (i.e.: SC03, Cold FTP, and Highway). I think Verify is looking for a highway test in the configuration 0 (S/S active). It was successfully labeled in 2013 this way.

The transaction identifier following is for the whole LDT Volkswagen final CAFE. The other messages are related to the work I must get Porsche to work on and grant permissions to use their indexes. This years' CAFE will include Porsche but not for the GHG calculation.

Transaction Identifier: \_83c7d3bd-7d2a-4300-985c-afacb3ae5f45

**Transaction Message Text :** LD-FE-CA-BR167 - If a subconfiguration contains a Test Number (CA-35) and the corresponding FE Label contains a Drive Source (GL-13.5.1) equal to 'C' (Combustion Engine), then within that subconfiguration, each unique combination of Vehicle ID (TI-4), Vehicle Configuration Number (TI-5), and Averaging Group Indicator (CA-41) must contain at least one test with a 5-Cycle Test Category (TI-45) equal to 'HWY' (Test Procedure equal to 3).(Model Type Index = 106 Base Level Inertia Class = 4500 Configuration Index = 1 SubConfiguration Index = 1)

If you have any questions today, I am here until 3 pm.

Thanks,  
Richard

*Richard E. Thomas*

VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**Cc:** Good, David[good.david@epa.gov]  
**From:** [Ex. 6]  
**Sent:** Thur 2/20/2014 6:50:09 PM  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

You're welcome. Thank you for the update.

[Ex. 6]

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To: Verify Help Desk@CSC

cc: "Good.David@epamail.epa.gov"  
<Good.David@epamail.epa.gov>

"Thomas, Richard (EEO)"  
<Richard.Thomas@vw.com>

Subject: RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

02/20/2014 07:55 AM

Thank you [Ex. 6];

We went ahead and created duplicate tests for these 2013 CAFE/GHG reports and now both PC and LDT VWGoA reports have been accepted into Verify. Now we begin to make corrects to the fleet average and standard calculations.

Best regards,  
Richard

**From:** [Ex. 6]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Tuesday, February 18, 2014 3:56 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

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**Transaction Message Text :** LD-FE-CA-BR167 - If a subconfiguration contains a Test Number (CA-35) and the corresponding FE Label contains a Drive Source (GL-13.5.1) equal to 'C' (Combustion Engine), then within that subconfiguration, each unique combination of Vehicle ID (TI-4), Vehicle Configuration Number (TI-5), and Averaging Group Indicator (CA-41) must contain at least one test with a 5-Cycle Test Category (TI-45) equal to 'HWY' (Test Procedure equal to 3).(Model Type Index = 106 Base Level Inertia Class = 4500 Configuration Index = 1 SubConfiguration Index = 1)

**Ex. 6**

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Contractor to the Environmental Protection Agency

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▼ "Thomas, Richard (EEO)" ---02/13/2014 02:25:21 PM---"Thomas, Richard (EEO)"  
<[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

To Verify Help Desk@CSC

cc

"Thomas, Richard (EEO)"  
<[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

Subject RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

02/13/2014 02:25 PM

Okay, yeah I tried it...it did not help.

**From:** **Ex. 6** [@csc.com](mailto:Ex.6@csc.com) **On Behalf Of** Verify Help Desk

**Sent:** Thursday, February 13, 2014 1:45 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** Giles, Michael (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We don't believe so. Two vehicles are referenced in your FE Label and because one of the vehicles does not have a HWY test this business rule is being returned.

**Ex. 6**

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Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

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▼ "Thomas, Richard (EEO)" ---02/13/2014 12:44:59 PM---"Thomas, Richard (EEO)"  
<[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

To Verify Help Desk@CSC

cc "Giles, Michael (EEO)" <[michael.giles@vw.com](mailto:michael.giles@vw.com)>

"Thomas, Richard (EEO)" <[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

Subject RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

02/13/2014 12:44 PM

Is there something I might have to do with average grouping and/or percentage of average for the two city tests with different configuration numbers maybe? I'm going to try a couple scenarios.

**From:** **Ex. 6** @csc.com] **On Behalf Of** Verify Help Desk

**Sent:** Thursday, February 13, 2014 12:43 PM  
**To:** Thomas, Richard (EEO)  
**Cc:** Giles, Michael (EEO)  
**Subject:** RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We looked into this issue and are consulting with the EPA. I will let you know as soon as we have an update.

**Ex. 6**

Verify Help Desk  
Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

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▼ "Thomas, Richard (EEO)" ---02/12/2014 12:35:09 PM---"Thomas, Richard (EEO)"  
<[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

To Verify Help Desk@CSC

cc "Giles, Michael (EEO)" <[michael.giles@vw.com](mailto:michael.giles@vw.com)>

"Thomas, Richard (EEO)" <[Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com)>

Subject RE: 2013 VWGoA Final LDT CAFE (HLP-4928)

02/12/2014 12:35 PM

Thanks **Ex. 6**,

I am down to only that one error message now; here is the Transaction Identifier: \_42272ae2-e29a-4e55-8074-ad7bcf8df706.

**From:** [Ex. 6]@csc.com] **On Behalf Of** Verify Help Desk  
**Sent:** Wednesday, February 12, 2014 11:17 AM  
**To:** Thomas, Richard (EEO)  
**Cc:** Good, David  
**Subject:** Re: 2013 VWGoA Final LDT CAFE (HLP-4928)

Hello Mr. Thomas,

We are looking into this issue and will get back to you shortly.

[Ex. 6]

Verify Help Desk  
Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

This is a PRIVATE message. If you are not the intended recipient, please delete without copying and kindly advise us by e-mail of the mistake in delivery. NOTE: Regardless of content, this e-mail shall not operate to bind CSC to any order or other contract unless pursuant to explicit written agreement or government initiative expressly permitting the use of e-mail for such purpose.

▼ "Thomas, Richard (EEO)" ---02/11/2014 02:46:05 PM---"Thomas, Richard (EEO)"  
<Richard.Thomas@vw.com>

To Verify Help Desk@CSC

cc "Good, David" <good.david@epa.gov>

Subject 2013 VWGoA Final LDT CAFE

"Thomas, Richard (EEO)" <Richard.Thomas@vw.com>

02/11/2014 02:45 PM

Hello **Ex. 6**

I am having trouble identifying what the problem is on the below message (BR167). The 2013 CAFE will be generated under VWX manufacturer code. This Audi model type index 106, has two city tests and one highway test numbers listed. Listed under different configuration numbers. See below:

City with S/S inactive configuration 1 test # DADX10022713

Highway with S/S inactive configuration 1 test # DADX10022714

City with S/S active configuration 0 text # DADX10022712

EPA allowed us to perform testing with the stop/start system active for only the city and US06 tests because the system does not allow the engine to stop during the other 5-cycle tests (i.e.: SC03, Cold FTP, and Highway). I think Verify is looking for a highway test in the configuration 0 (S/S active). It was successfully labeled in 2013 this way.

The transaction identifier following is for the whole LDT Volkswagen final CAFE. The other messages are related to the work I must get Porsche to work on and grant permissions to use their indexes. This years' CAFE will include Porsche but not for the GHG calculation.

Transaction Identifier: \_83c7d3bd-7d2a-4300-985c-afacb3ae5f45

**Transaction Message Text :** LD-FE-CA-BR167 - If a subconfiguration contains a Test Number (CA-35) and the corresponding FE Label contains a Drive Source (GL-13.5.1) equal to 'C' (Combustion Engine), then within that subconfiguration, each unique combination of Vehicle ID (TI-4), Vehicle Configuration Number (TI-5), and Averaging Group Indicator (CA-41) must contain at least one test with a 5-Cycle Test Category (TI-45) equal to 'HWY' (Test Procedure equal to 3).(Model Type Index = 106 Base Level Inertia Class = 4500 Configuration Index = 1 SubConfiguration Index = 1)

If you have any questions today, I am here until 3 pm.

Thanks,  
Richard

*Richard E. Thomas*

VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Snyder, Jim  
**Sent:** Thur 2/20/2014 8:09:31 PM  
**Subject:** 2015 SCR AECD Approval  
2015 SCR AECD Approval CBI FVGA COMMON RFA SCR R01.pdf

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)



**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**Cc:** Stump, Barbara[Stump.Barbara@epa.gov]  
**From:** Snyder, Jim  
**Sent:** Thur 2/20/2014 8:26:42 PM  
**Subject:** cert fees not paid yet

Bill, I approved one certificate but the fees haven't been logged in for the other two. If this is a rush we can give Barbara a heads up, otherwise I'm guessing they will probably appear by Monday.



Motor

For Certification

Manufacturer Name VOLKSWAGEN

Address 3800 Ha

City/State/Zip Code/Country Au

On-Highway

☒ LDV/LDT/MDPV/HDV (Chassis cert)

☐ LDV/LDT/MDPV/HDV (Chassis cert)

☐ HDE (Engine Dyno cert) FEDERAL

EPA standard family or test group:

Amount paid (U.S. Funds Only):

Enter the check number, or the state

Reduced

Reduced fee calculation (minimum ini

Aggregate retail sales price of the

Check box if an Independent Commercial

--	--

--	--



U.S.  
Motor Vehicle

For Certification

Manufacturer Name VOLKSWAGEN GroupAddress 3800 HamiltonCity/State/Zip Code/Country Auburn

On-Highway Certification

- ☒ LDV/LDT/MDPV/HDV (Chassis cert)
- ☐ LDV/LDT/MDPV/HDV (Chassis cert)
- ☐ HDE (Engine Dyno cert) FEDERAL

EPA standard family or test group:

Amount paid (U.S. Funds Only):

Enter the check number, or the statement

Reduced Fee

Reduced fee calculation (minimum initial

Aggregate retail sales price of the vehicle

Check box if an Independent Commercial

--

--

--

--

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)



**U.S. Environmental Protection Agency  
Motor Vehicle and Engine Compliance Program  
On-Highway Fee Filing Form**

For Certification Applications Received In Calendar Year 2014

Manufacturer Name VOLKSWAGEN Group of America, Inc.

Address 3800 Hamlin Road

City/State/Zip Code/Country Auburn Hills, MI 48326

**On-Highway Certification Request Type (check one)**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) FEDERAL (\$28,528) | <input type="checkbox"/> HDV EVAP-ONLY (\$563)      |
| <input type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) CAL-ONLY (\$15,077)           | <input type="checkbox"/> HDE CALIF-ONLY (\$563)     |
| <input type="checkbox"/> HDE (Engine Dyno cert) FEDERAL (\$38,464)                     | <input type="checkbox"/> MOTORCYCLE (\$1,717)       |
|  | <input type="checkbox"/> LD/MDPV/HDV ICI (\$88,591) |

EPA standard family or test group:

F V G A T 0 3 . 0 N U 3

Amount paid (U.S. Funds Only):

\$ 28,528.00

Enter the check number, or the statement "WIRE" or "ACH":

EFT

**Reduced Fee Section (40 CFR 51027.120)**

Reduced fee calculation (minimum initial payment \$750): Total number of vehicles/units covered: \_\_\_\_\_

Aggregate retail sales price of the vehicles/units: \$ \_\_\_\_\_ x 1% = \$ \_\_\_\_\_

Check box if an Independent Commercial Importer: ☐ List the VIN of imported vehicles/engines below:


**Ex. 6**

Company Representative: Richard E. Thomas Signature: \_\_\_\_\_

Title: Emission Cert Strategist Phone/Fax: 248 754 4213 / 248 754 4207 Date: 02/12/2014

E-mail Address: Richard.Thomas@VW.com

**Submission of payments and forms:**

- (1) Online: Forms may be found and submitted with or without payments online at [www.Pay.gov](http://www.Pay.gov).  
(2) By mail: For check payments only, send checks and this form to:

**Environmental Protection Agency  
Motor Vehicle and Engine Compliance Program  
P.O. Box 979032  
St. Louis, MO 63197-9000**

- (3) Transmit offline Wire payments to the New York Federal Reserve Bank. (See Instructions, p.2)  
(4) Transmit offline ACH payments to the Federal Reserve Bank of Cleveland. (Instructions, p.2)  
(5) Forms not submitted under (1) and (2) above can be sent as email attachments to [Fees@epa.gov](mailto:Fees@epa.gov).  
Forms and payments sent in ways other than the above may be delayed or ineffective. See the Instructions for sending checks and forms by private mail service (e.g., Federal Express).

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Motor Vehicle and Engine Compliance Program  
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For Certification Applications Received In Calendar Year 2014

Manufacturer Name VOLKSWAGEN Group of America, Inc.

Address 3800 Hamlin Road

City/State/Zip Code/Country Auburn Hills, MI 48326

On-Highway Certification Request Type (check one)

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) FEDERAL (\$28,528) | <input type="checkbox"/> HDV EVAP-ONLY (\$563)      |
| <input type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) CAL-ONLY (\$15,077)           | <input type="checkbox"/> HDE CALIF-ONLY (\$563)     |
| <input type="checkbox"/> HDE (Engine Dyno cert) FEDERAL (\$38,464)                     | <input type="checkbox"/> MOTORCYCLE (\$1,717)       |
|  | <input type="checkbox"/> LD/MDPV/HDV ICI (\$88,591) |

EPA standard family or test group:

F	V	G	A	T	0	3	.	0	N	U	2
---	---	---	---	---	---	---	---	---	---	---	---

Amount paid (U.S. Funds Only):

**\$ 28,528.00**

Enter the check number, or the statement "WIRE" or "ACH":

EFT

## Reduced Fee Section (40 CFR \$1027.120)

Reduced fee calculation (minimum initial payment \$750): Total number of vehicles/units covered: \_\_\_\_\_

Aggregate retail sales price of the vehicles/units: \$ \_\_\_\_\_ x 1% = \$ \_\_\_\_\_

Check box if an Independent Commercial Importer: ☐ List the VIN of imported vehicles/engines below:


## Ex. 6

Company Representative: Richard E. Thomas

Signature:

**Title:** Emission Cert Stratagist

Phone/Fax: 248 754 4213

248 754 4207

Date: 02 / 12 / 2014

**E-mail Address:** Richard.Thomas@VW.com

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Motor Vehicle and Engine Compliance Program  
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|--|---|
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| <input type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) CAL-ONLY (\$15,077)           | <input type="checkbox"/> HDE CALIF-ONLY (\$563)     |
| <input type="checkbox"/> HDE (Engine Dyno cert) FEDERAL (\$38,464)                     | <input type="checkbox"/> MOTORCYCLE (\$1,717)       |
|  | <input type="checkbox"/> LD/MDPV/HDV ICI (\$88,591) |

EPA standard family or test group:

F V G A T 0 3 . 0 N U 3

Amount paid (U.S. Funds Only):

\$ 28,528.00

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EFT

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**Ex. 6**

Company Representative: Richard E. Thomas

Signature: \_\_\_\_\_

Title: Emission Cert Strategist Phone/Fax: 248 754 4213 / 248 754 4207 Date: 02/12/2014

E-mail Address: Richard.Thomas@VW.com

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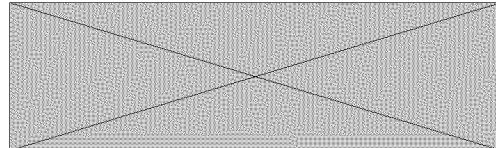


**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Thur 2/20/2014 8:54:31 PM  
**Subject:** P.M. NEWSCAST: 'We don't need unions,' S.C. governor says | Tesla's Musk confirms talks with Apple | Peek at Audi TT coupe | Chevy's surprise ending

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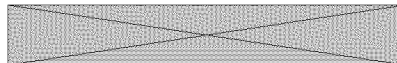
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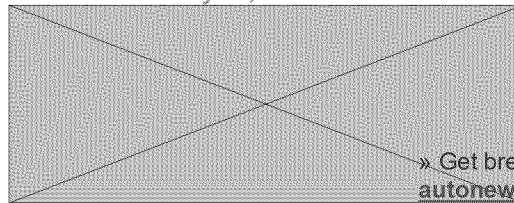
..

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Thur 2/20/2014 9:32:30 PM  
**Subject:** DAILY: Ford splits with longtime TV pitchman Mike Rowe | GM knew of ignition defect a decade ago, report says | Former Denso exec to plead guilty to price-fixing coverup charge

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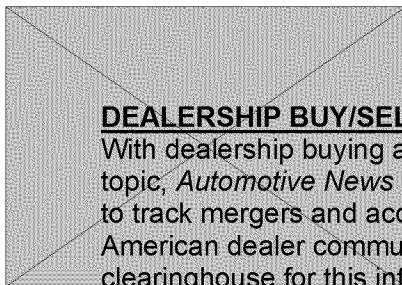
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February 20, 2014



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**TOP NEWS**

**Ford splits with longtime TV pitchman Mike Rowe**

UPDATED: 2/20/14 10:00 am ET - adds videos  
7:33 am U.S. ET | Feb 20

Ford and longtime pitchman Mike Rowe, host of "Dirty Jobs," have made a clean break. Ford spokesman Chris Preuss said the Detroit automaker has parted ways with the TV personality and host of the Discovery Channel's now cancelled show. ... » [READ](#)

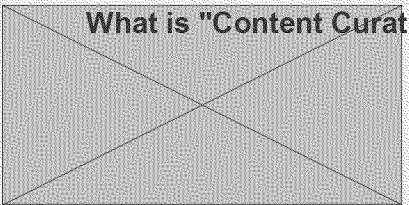
**GM knew of ignition defect a decade ago, report says**

12:53 pm U.S. ET | Feb 20

General Motors knew a decade ago about the ignition problems that triggered last week's recall of compact cars, according to a newspaper report that cites

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## **Former Denso exec to plead guilty to price-fixing coverup charge**

2:27 pm U.S. ET | Feb 20

A former Denso executive is expected to serve one year and one day in federal prison after agreeing to plead guilty to one charge of obstruction of justice in the United States government's ongoing price-fixing investigation of auto suppliers. ... » [READ](#)

## **China will ease limits on foreign stake in JVs**

1:48 pm U.S. ET | Feb 20

China's Ministry of Industry and Information Technology wants to loosen ownership restrictions on foreign automakers' joint ventures despite strong opposition from state-owned auto companies. ... » [READ](#)

## **Tesla's Musk confirms Apple talks, says deal 'unlikely'**

UPDATED: 2/20/14 4:15 p.m. ET - adds closing stock price

2:10 pm U.S. ET | Feb 20

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» **Tesla stock hits new high**

**on Apple rumors**  
**» Toyota says union demand for pay hike is surprisingly high**

**Tesla Q4 net loss narrows to \$16 million**

UPDATED: 2/20/14 8:56 am ET  
4:17 pm U.S. ET | Feb 19

**ADESA to open more online auctions to more dealers**

3:27 pm U.S. ET | Feb 20

**Ford sued over use of company's hybrid vehicle inventions**

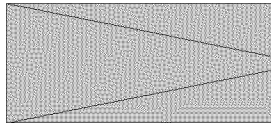
UPDATED: 2/20/14 11:49 am ET - adds copy of suit  
11:07 am U.S. ET | Feb 20

**Audi gives TT a fresh look**

6:05 am U.S. ET | Feb 20

**Fresh from win over UAW at VW, Norquist vows anti-union push**

1:44 pm U.S. ET | Feb 20



**» 2/27 - Mobile**

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**» 3/04 - Social & Digital Strategy** by  
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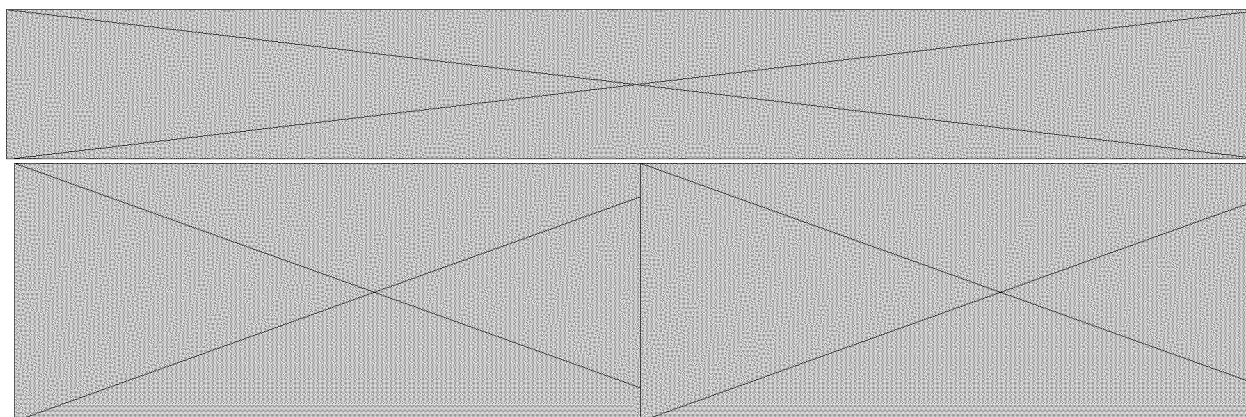
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## S.C. governor tells unionized companies to stay away

2:44 pm U.S. ET | Feb 20



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Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207

..

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Rodgers, William (EEO)  
**Sent:** Fri 2/21/2014 4:13:55 PM  
**Subject:** RE: cert fees not paid yet

Jim,

I was told they were paid today (probably last night), instead of Wednesday as planned.

Thanks,

Bill

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]  
**Sent:** Thursday, February 20, 2014 3:27 PM  
**To:** Rodgers, William (EEO)  
**Cc:** Stump, Barbara  
**Subject:** cert fees not paid yet

Bill, I approved one certificate but the fees haven't been logged in for the other two. If this is a rush we can give Barbara a heads up, otherwise I'm guessing they will probably appear by Monday.



Motor

For Certification

Manufacturer Name VOLKSWAGEN

Address 3800 Ha

City/State/Zip Code/Country Au

On-Highway

☒ LDV/LDT/MDPV/HDV (Chassis cert)

☐ LDV/LDT/MDPV/HDV (Chassis cert)

☐ HDE (Engine Dyno cert) FEDERAL

EPA standard family or test group:

Amount paid (U.S. Funds Only):

Enter the check number, or the state

Reduced

Reduced fee calculation (minimum ini

Aggregate retail sales price of the

Check box if an Independent Commercial

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U.S.  
Motor Vehicle

For Certification

Manufacturer Name VOLKSWAGEN GroupAddress 3800 HamiltonCity/State/Zip Code/Country Auburn

On-Highway Certification

- ☒ LDV/LDT/MDPV/HDV (Chassis cert)
- ☐ LDV/LDT/MDPV/HDV (Chassis cert)
- ☐ HDE (Engine Dyno cert) FEDERAL

EPA standard family or test group:

Amount paid (U.S. Funds Only):

Enter the check number, or the statement

Reduced

Reduced fee calculation (minimum initial

Aggregate retail sales price of the vehicle

Check box if an Independent Commercial

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Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)



**U.S. Environmental Protection Agency  
Motor Vehicle and Engine Compliance Program  
On-Highway Fee Filing Form**

For Certification Applications Received In Calendar Year 2014

Manufacturer Name VOLKSWAGEN Group of America, Inc.

Address 3800 Hamlin Road

City/State/Zip Code/Country Auburn Hills, MI 48326

**On-Highway Certification Request Type (check one)**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) FEDERAL (\$28,528) | <input type="checkbox"/> HDV EVAP-ONLY (\$563)      |
| <input type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) CAL-ONLY (\$15,077)           | <input type="checkbox"/> HDE CALIF-ONLY (\$563)     |
| <input type="checkbox"/> HDE (Engine Dyno cert) FEDERAL (\$38,464)                     | <input type="checkbox"/> MOTORCYCLE (\$1,717)       |
|  | <input type="checkbox"/> LD/MDPV/HDV ICI (\$88,591) |

EPA standard family or test group:

F V G A T 0 3 . 0 N U 3

Amount paid (U.S. Funds Only):

\$ 28,528.00

Enter the check number, or the statement "WIRE" or "ACH":

EFT

**Reduced Fee Section (40 CFR 51027.120)**

Reduced fee calculation (minimum initial payment \$750): Total number of vehicles/units covered: \_\_\_\_\_

Aggregate retail sales price of the vehicles/units: \$ \_\_\_\_\_ x 1% = \$ \_\_\_\_\_

Check box if an Independent Commercial Importer: ☐ List the VIN of imported vehicles/engines below:


**Ex. 6**

Company Representative: Richard E. Thomas Signature: \_\_\_\_\_

Title: Emission Cert Strategist Phone/Fax: 248 754 4213 / 248 754 4207 Date: 02/12/2014

E-mail Address: Richard.Thomas@VW.com

**Submission of payments and forms:**

- (1) Online: Forms may be found and submitted with or without payments online at [www.Pay.gov](http://www.Pay.gov).  
(2) By mail: For check payments only, send checks and this form to:

**Environmental Protection Agency  
Motor Vehicle and Engine Compliance Program  
P.O. Box 979032  
St. Louis, MO 63197-9000**

- (3) Transmit offline Wire payments to the New York Federal Reserve Bank. (See Instructions, p.2)  
(4) Transmit offline ACH payments to the Federal Reserve Bank of Cleveland. (Instructions, p.2)  
(5) Forms not submitted under (1) and (2) above can be sent as email attachments to [Fees@epa.gov](mailto:Fees@epa.gov).  
Forms and payments sent in ways other than the above may be delayed or ineffective. See the Instructions for sending checks and forms by private mail service (e.g., Federal Express).

The public reporting and recordkeeping burden for this collection of information is estimated to average 18 minutes per response. Send comments on EPA's need for this information, the accuracy of the provided burden estimate, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques, to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., N.W., Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed Form 3520-29 to this address.

This form expires: 10/31/2016



**U.S. Environmental Protection Agency  
Motor Vehicle and Engine Compliance Program  
On-Highway Fee Filing Form**

For Certification Applications Received In Calendar Year 2014

Manufacturer Name VOLKSWAGEN Group of America, Inc.

Address 3800 Hamlin Road

City/State/Zip Code/Country Auburn Hills, MI 48326

## On-Highway Certification Request Type (check one)

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) FEDERAL (\$28,528) | <input type="checkbox"/> HDV EVAP-ONLY (\$563)      |
| <input type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) CAL-ONLY (\$15,077)           | <input type="checkbox"/> HDE CALIF-ONLY (\$563)     |
| <input type="checkbox"/> HDE (Engine Dyno cert) FEDERAL (\$38,464)                     | <input type="checkbox"/> MOTORCYCLE (\$1,717)       |
|  | <input type="checkbox"/> LD/MDPV/HDV ICI (\$88,591) |

EPA standard family or test group:

F	V	G	A	T	0	3	.	0	N	U	2
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Amount paid (U.S. Funds Only):

**\$ 28,528.00**

Enter the check number, or the statement "WIRE" or "ACH":

EFT

## Reduced Fee Section (40 CFR \$1027.120)

Reduced fee calculation (minimum initial payment \$750): Total number of vehicles/units covered: \_\_\_\_\_

Aggregate retail sales price of the vehicles/units: \$ \_\_\_\_\_ x 1% = \$ \_\_\_\_\_

Check box if an Independent Commercial Importer: ☐ List the VIN of imported vehicles/engines below:


## Ex. 6

Company Representative: Richard E. Thomas

Signature:

**Title:** Emission Cert Stratagist

Phone/Fax: 248 754 4213

248 754 4207

Date: 02 / 12 / 2014

**E-mail Address:** Richard.Thomas@VW.com

**Submission of payments and forms:**

- (1) Online: Forms may be found and submitted with or without payments online at [www.Pay.gov](http://www.Pay.gov).  
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Environmental Protection Agency  
Motor Vehicle and Engine Compliance Program  
P.O. Box 979032  
St. Louis, MO 63197-9000

- (3) Transmit offline Wire payments to the New York Federal Reserve Bank. (See Instructions, p.2)  
(4) Transmit offline ACH payments to the Federal Reserve Bank of Cleveland. (Instructions, p.2)  
(5) Forms not submitted under (1) and (2) above can be sent as email attachments to Fees@epa.gov.  
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The public reporting and recordkeeping burden for this collection of information is estimated to average 18 minutes per response. Send comments on EPA's need for this information, the accuracy of the provided burden estimate, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques, to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., N.W., Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed Form 3520-29 to this address.

~~This form expires: 10/31/2016~~

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Rodgers, William (EEO)  
**Sent:** Fri 2/21/2014 4:27:09 PM  
**Subject:** RE: 2015 SCR AECD Approval

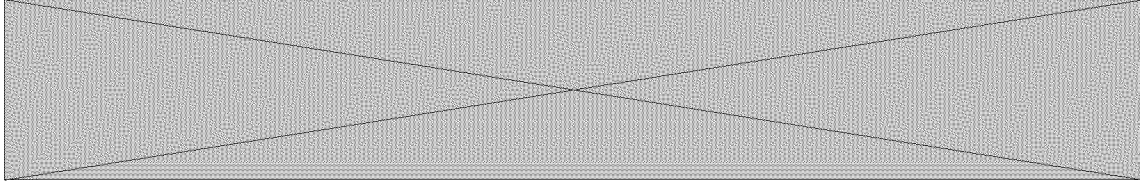
Thanks

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]  
**Sent:** Thursday, February 20, 2014 3:10 PM  
**To:** Rodgers, William (EEO)  
**Subject:** 2015 SCR AECD Approval

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Fri 2/21/2014 5:04:14 PM  
**Subject:** Green Car Report Daily Headlines

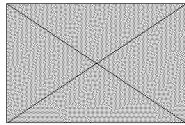
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The latest from your friends at GCR:

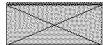
## Ram EcoDiesel Demand, All-Electric Bhutan, Mitsubishi Mini Motor: Today's Car News

Feb 21, 2014 03:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com) (Stephen Edelstein)



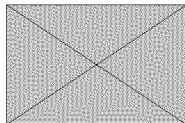
Today on Green Car Reports: Mitsubishi develops a smaller motor for electric cars, the 2014 Ram 1500 EcoDiesel pickup is in high demand, and Nissan CEO Carlos Ghosn journeys to the mountainous Asian nation of Bhutan to plan how the country can go all-electric-car. All this and more on Green Car Reports. Nissan will work with Bhutan toward its goal...

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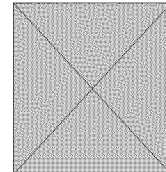
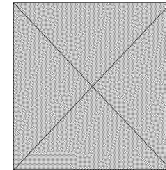
## 2015 Nissan Micra: \$10K Minicar For Canada--Paid For By Smart?

Feb 21, 2014 03:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com) (John Voelcker)



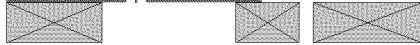
A fuel-efficient five-door hatchback a little smaller than a subcompact—for less than \$10,000? That sounds like a pretty good deal. Unfortunately, it's a deal only available to Canadian buyers—because the 2015 Nissan Micra is being offered just in that country, not in the United States. MORE: Driving Nissan's Micra Minicar,

More ways to follow us:



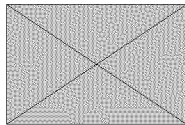
Which We Can't...

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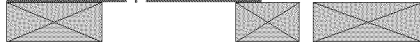
## Chevy Volt Charging Cord Cut: Angry Neighbor, Electric- Car Hater?

Feb 21, 2014 02:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



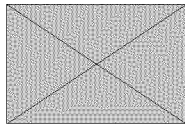
Owning a plug-in electric car, as buyers learn, is a process of educating the public at large. Mostly, people are curious when they see a car plugged in to recharge. But occasionally, uglier emotions come into play. That's apparently what happened to Matthew Cummings and Jennifer Brown. The couple live in a high-rise condominium apartment in a...

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## 2014 Ram 1500 EcoDiesel Pickup Logs 8,000 Orders In Three Days

Feb 21, 2014 01:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



The 2014 Ram 1500 EcoDiesel pickup hasn't quite reached dealers yet, but its high fuel-economy rating is already making an impression on truck buyers. Ram says it received more than 8,000 orders for the EcoDiesel in just three days, completely filling the initial allocation planned for the diesel half-ton pickup. MORE: Diesel Pickup Trucks From...

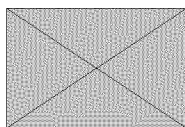
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## Mitsubishi's Mini-Motor For Electric Cars Integrates...Well, A Lot

Feb 21, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)





Electric vehicles already offer car designers much greater freedom than internal combustion vehicles, eliminating the need to find space for the rigid shape of an engine, its transmission and its ancillaries. That's not to say electric vehicle packaging can't be improved though, and Mitsubishi is aiming to do just that with its prototype electric...

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## New Mazda Hazumi Concept Is New Mazda 2, Next Toyota Yaris Too

Feb 21, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



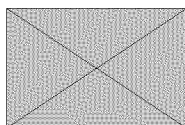
With the new Mazda3, Mazda6 and CX-5 crossover launched over the last few years, you might have forgotten the smaller Mazda2 subcompact even exists. Mazda hasn't forgotten the 2 though, and will unveil a new subcompact concept car at the Geneva Motor Show to point the way to its replacement. Mazda calls it the Hazumi, which means "bound" or...

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## Nissan To Work With Bhutan Toward 'Electric-Car Nation' Goal

Feb 21, 2014 12:13 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



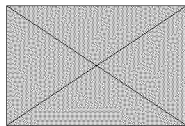
The small Asian nation of Bhutan has a very big goal: It hopes to convert the country's vehicles to almost all electric power. Today, Prime Minister Tshering Tobgay and Nissan CEO Carlos Ghosn announced an agreement between the nation and the carmaker to work together toward that goal. Nissan Leaf electric cars are to become both Bhutanese...

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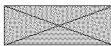
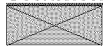
## Volkswagen Golf GTE Plug-In Hybrid: Geneva Motor Show Preview

Feb 20, 2014 11:10 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Volkswagen has released full details of its all-new Golf GTE, a plug-in hybrid model making its debut at the upcoming Geneva Motor Show. The German automaker has chosen the sporty GTE moniker as a way of tying the model into its GTI and GTD gasoline and diesel sports hatchbacks, but as the 'E' suggests an electric drivetrain is the main...

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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Inside Cleantech  
**Sent:** Fri 2/21/2014 7:24:40 PM  
**Subject:** Oil & Gas Innovation Webinar; Global Cleantech 100 Co.s Seeing Success

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February 21, 2014

## The Global Cleantech 100 Are on Fire!

Mined from [i3](#), augmented by hundreds of nominations from cleantech insiders around the world, and finally voted on by an expert panel, the [Global Cleantech 100](#) represents the most innovative and promising companies in cleantech.

The fact that many of these companies are experiencing traction these days fuels our continued ambition to run this process each year (2014 will be the 6th year in the running) and certainly feels emblematic of just how far resource innovation companies have come.

The exit in January is already making us feel good about 2014: Google's \$3.2 billion acquisition of [Nest](#), our 2013 Global Cleantech 100 overall winner, is a testament to golden nuggets of cleantech going "mainstream." The provider of a networked learning thermostat will now be scaling its business and delivering to your door the latest smart home products. Another strong Global Cleantech 100 Alumni - [Opower](#), announced it filed for IPO last week.

Others that have received large new rounds of investments in the past few months include [Skyonic](#), [Airbnb](#), [Kaiima](#) and an anticipated \$100 million round for [Sunrun](#). What's more: [Elevance Renewable Sciences](#) launched its personal care product lines for commercial availability, and [Beta Renewables](#) continues to make progress on the world's largest advanced biofuels facility in Italy.

We are counting on you (the cleantech community) to help us yet again award the most cutting edge companies that will change the way we live, breath and eat. Please nominate for the [2014 Global Cleantech 100](#) (the usual [criteria](#) apply). Thanks in advance for your contributions!

*Deal-level data on investments, investors, and companies are available for subscribers in [i3](#).*

*Make sure your company's [i3](#) profile is up to date by contributing content: [own your company's profile today](#).*

## **Oil and Gas Innovation: Webinar Replay**

Listen to Jonathan Rhone, CEO, Axine Water Technologies, and Jean-Michel Gires, Venture Partner, Chrystalix Energy Venture Capital (and former President & CEO, Total E&P Canada) discuss what it takes to move from an idea, to a funding or partnership deal, and into the energy fields. If you missed the live version, then you can watch the [webinar replay](#).

## **This Week's Top Deals**

- [Hampton Creek Foods](#) received \$23 million from Li Ka-shing's Horizons Ventures, along with [Khosla Ventures](#), [Eagle Cliff Partners](#), and angel investors Jerry Yang, Jessica Powell, and Scott Banister.
- [Siemens Venture Capital \(SVC\)](#) has launched a new \$100 million Industry of the Future fund targeting early stage deals in industrial automation and digital technology.
- [Volkswagen](#) and [SNAM](#) have entered into a partnership to recycle the hybrid and EV batteries.
- China's [Wanxiang Group](#) won the auction of [Fisker Automotive](#) with a \$150 million bid.
- [Qualiteo](#), a French smart grid start-up company, has completed a second round of investment with major cleantech funds of [Demeter Partners](#) and [Emertec](#) of €2 million (~\$2.8 million).

*13 subscribers have unlimited access to updates. Not a subscriber? [Schedule a demo](#) and let us give you a tour.*

## **From the Cleantech Insights Blog**

### **This Deal Matters**

[Rennovia](#), the California-based developer of renewable catalyst and chemical technologies, announced last week that [Archer Daniels Midland \(ADM\)](#) has committed to a \$25 million equity investment to co-develop bio-based chemical products. Specifically, Rennovia will leverage ADM's strength in manufacturing in order to reach commercial production of biochemicals utilizing Rennovia's core

## **Upcoming Events**

### **Cleantech Forum San Francisco 2014**

March 11-13, 2014  
San Francisco, CA

Speakers include:

**Dan Yates**, *Opower*  
**Jennifer Holmgren**, *LanzaTech*  
**Tom Steyer**, *Investor*  
**Tom Siebel**, *C3 Energy*  
**Pres. Peevey**, *California Public Utilities Commission*

processing technology....[Read more.](#)

## **Agriculture & Food Breakfast Recap**

**Bert Valdman**, *Edison Int'l*

**Brian Janous**, *Microsoft*

[Register now.](#)

[Call for speakers open.](#)

### **[Cleantech Forum Europe 2014](#)**

May 19-21, 2014

Stockholm, Sweden

[Register now.](#)

[Entrepreneur Showcase open.](#)

[Call for speakers open.](#)

### **[Water Innovation Summit](#)**

September 23-24, 2014

Berkeley, CA

[Request an invitation.](#)

### **[Global Cleantech 100 Week 2014](#)**

Washington, DC: October 6-7, 2014

London: October 9, 2014

[Request an invitation.](#)

### **[China Tour 2014](#)**

November 2-7, 2014

China

[Apply for a Place.](#)

### **[Cleanweb and the City 2](#)**

November 12-13, 2014

New York City, NY

[Request an invitation.](#)

### **[Big Data Meets Ag at our Power Breakfast](#)**

On February 14, Cleantech Group, Silicon Valley Bank, and Wilson Sonsini Goodrich & Rosati hosted a Power Breakfast focused on Agriculture & Food. Conversation starters from [Monsanto Ventures](#), [Khosla Ventures](#), [AgFunder](#), [OnFarm](#), and [Grundfos](#), along with over seventy investors, corporates, startup and grower attendees, discussed topics ranging from... [Read more.](#)

## **Company of the Week**

[Sunfire](#) is a German company developing technologies for a closed carbon cycle, including the conversion of regenerative electricity to synthetic, liquid fuels or gas. In addition, Sunfire has developed a Solid Oxide Cell stack, providing higher efficiencies compared to legacy technologies according to the company. The

company has received funding from [Bilfinger Venture Capital](#) and ERP-Startfonds. Sunfire owns their profile in i3 and will be presenting at the Entrepreneur Showcase at the [Cleantech Forum San Francisco](#). Will you be there? [Read more](#).

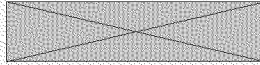
*Sunfire owns its profile in i3, **do you own yours?***

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**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Rodgers, William (EEO)  
**Sent:** Mon 2/24/2014 12:53:18 PM  
**Subject:** Cooling fans

Hello Jim,

I received a question from one of our factories about whether EPA is still planning to install new fans in the labs. Can you let me know if so and possible provide photos?

Thanks,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Morning Transportation  
**Sent:** Mon 2/24/2014 3:04:02 PM  
**Subject:** POLITICO's Morning Transportation, presented by POWERJobs: What's up this week? — Schumer calls for auto data security — The FAA's drone war — UAW appeals VW vote

By Adam Snider

Featuring Kevin Robillard and Kathryn A. Wolfe

**WHAT TO WATCH FOR THIS WEEK:** As the Highway Trust Fund barrels toward bankruptcy, the next transportation bill will be a hot topic this week. We'll get to hear from the key players at the AASHTO conference - Transportation Secretary Anthony Foxx and Senate EPW Chair Barbara Boxer speak on Wednesday and House Transportation Chair Bill Shuster is up on Thursday. And the House T&I Committee gets involved with a Wednesday roundtable on reauthorization and a Thursday hearing on highway freight mobility. As Congress worries about the bill, President Barack Obama is taking a different road. On Wednesday he goes to St. Paul, Minn., to unveil "a new competition encouraging investments to create jobs and restore infrastructure" that's part of the administration's sans-Congress push.

**SCHUMER WANTS AUTO DATA STANDARDS:** Sen. Chuck Schumer wants NHTSA and the Federal Trade Commission to set guidelines to protect drivers' data as more and more cars are linked to personal information. In a Sunday release, the New York senator cited a 2013 GAO report that found that 90 percent of automakers shared data collected from drivers with a third party. "Cars are 'smarter' than they have ever been, and they will only continue to get smarter as technology continues to evolve at a rapid pace. Cars are now able to track where we shop, where we eat and where we go on family vacations, but drivers should be able to go about their daily lives without being tracked," he said.

**MUST-READ - The drone problem:** Kevin has the story: "The Washington Nationals used a drone to photograph spring training. Real estate agents use them to show off sprawling properties. Martin Scorsese hired one to film a scene in 'The Wolf of Wall Street.' So where does this leave the FAA, which insists that commercial drone use is illegal? Way behind - and facing turbulence as drone use explodes. Thanks to falling prices, spotty enforcement and the fact that it's almost impossible to spot the devices being used, the FAA is often powerless to halt the growing drone swarm. Retailers freely sell the tiny planes, quadcopters and hexacopters for as little as a few hundred dollars, and entrepreneurs continually come up with creative uses like wedding photography and crop monitoring - along with delivering beer and dropping off dry-cleaning." Read the whole thing on POLITICO: <http://politi.co/1feRdhA>

**GOOD MONDAY MORNING.** Thanks for reading POLITICO's Morning Transportation, your daily tipsheet on trains, planes, automobiles and ports, where on this day in 1582, Pope Gregory XIII issued a decree about what would come to be called the Gregorian Calendar, which made several small updates to the Julian calendar, like how often leap years occur. Please be in touch: [asnider@politico.com](mailto:asnider@politico.com) and on Twitter at [@AdamKSnider](https://twitter.com/AdamKSnider).

"I'm tired of waiting on a plane that don't have wings..." <http://bit.ly/1mBHls6>



**DENHAM, CHSRA SPAR OVER FUNDING:** Rep. Jeff Denham sent a scathing press release on Friday, saying the FRA is "protecting" the California High-Speed Rail Authority and thereby "putting California taxpayers at greater risk." His anger came from the agency's adoption of a new Funding Contribution Plan - essentially a detailed spreadsheet of current and projected expenditures and revenues. Denham said the document pushes back by three months the deadline for CHSRA to chip in \$180 million toward the project, but the Authority says the April 1 deadline (now July 1) never really existed in the first place. It's a bit of a semantic fight that gets into how the underlying grant agreement is a "living document" that reflects the new funding plans filed every quarter. The takeaway, however, remains the same: Denham and Republicans are still doing their best to derail the ambitious \$67 billion project. Your host explains it for Pros: <http://politico.pro/1ceeWP0>

**LET'S PLAY SOME SLOTS:** The final DCA slot that the new American Airlines had to give up has been accounted for. It went to Southwest Airlines - which won't even use it. A spokeswoman told Bloomberg that on top of the 27 daily round trip flights it agreed to buy, it won the rights to a Sunday round-trip flight, which "we did not pay for" and will not use (<http://bloom.bg/MnaIgU>).

**\*\*A message from POWERJobs: Jobs on our radar this week: Senior Communications Associate at HDMK, HR Business Partner at METRO and Business Intelligence Developer at SAIC. Interested? Apply to these jobs and more at [www.POWERJobs.com](http://www.POWERJobs.com); finally, a career site made for YOU!\*\***

**IN TODAY'S FEDERAL REGISTER:** DOT kicks off the comment period on banning cell phone calls during flights, a much-discussed topic that's been the rare issue to bring together members of Congress from both parties (according to statements) and the American public (according to multiple polls). The comment period ends March 26. <http://1.usa.gov/NpDAWN>

**GOVS FOR DEVOLUTION:** Two GOP governors suggested eliminating the federal DOT and devolving transportation spending back to the states on Saturday. Dave Heineman of Nebraska and Jan Brewer of Arizona, at the NGA winter meeting, complained that the lack of long-term funding certainty was hampering their ability to plan road projects. The most recent highway bill, MAP 21, lasted only 27 months. "I think the states have been a lot more innovative than the federal government," Heineman said during a meeting on the next bill. "I've often thought, why don't you just give us the federal gas tax and let us take care of it. We'll just take you out of the picture, get rid of the Department of Transportation, all the regulatory agencies and we'll take care of it at the state level." "I vote aye," Gov. Brewer interjected. But former DOT official Roy Kienitz laid down a bit of reality by saying it's a long-shot.

**THIS AIN'T OVER YET:** The UAW is appealing the recent loss of a unionization vote at a VW plant in Chattanooga, Tenn., claiming "extraordinary interference" from Republican pols in the state like Sen. Bob Corker and Gov. Bill Haslam. "It's an outrage that politically motivated third parties threatened the economic future of this facility and the opportunity for workers to create a successful operating model that would grow jobs in Tennessee," UAW President Bob King said in a statement. Read the text of the appeal (<http://bit.ly/1fuGNyT>) or get the whole

story from Kevin on POLITICO: <http://politi.co/1fGk9Qc>

**Notable:** Haslam made a mention of the fed's role in infrastructure at a POLITICO event: "Government has a really proper role. Anytime we tear down the idea that government is necessary is wrong," he said. "Government is about buying those goods and services that people can't buy themselves. We can't buy our own roads. We can't build our own schools." POLITICO: <http://politi.co/1k0Oopg>

**DOT, FREIGHT RAIL AGREE TO TANK CAR CHANGES:** The freight rail industry and DOT have reached a deal on changes to improve the safety of rail cars transporting crude oil. According to a letter from Secretary Foxx to AAR (<http://politico.pro/1hmKo0z>), railroads have agreed to increase inspections of tracks and other items beyond what's required by current regulations, analyze the routes trains use based on more stringent safety factors typically used for hazardous materials, slow down trains carrying more than 20 crude cars through DHS-designated high threat areas and install new braking systems to help reduce what's called the "pile up effect" during derailments. Friday's announcement was one of the first results of a "call to action" meeting between Foxx and stakeholders, with more coming - maybe even this week. Kathryn has more for Pros: <http://politico.pro/1feTXeX>

**HOT HOT HOT:** The battery in the Japan Airlines Dreamliner that was smoking last year reached 1220 degrees Fahrenheit, Japanese investigators said in a report issued Friday. AFP: <http://bit.ly/1dkU1tG>

## THE AUTOBAHN (SPEED READ)

- Amtrak has a new plan to give free rides to writers - here's how it came to be. The Wire: <http://bit.ly/1enLVjM>
- Dulles Airport has been formally invited to apply for a TIFIA loan for the Silver Line Metro project. MWAA: <http://bit.ly/1fuUsGb>
- France, U.S. discussing reparations for Nazi victims transported in French trains - and the issue is tied to bidding on Maryland's Purple Line. Washington Post: <http://wapo.st/1k0SygF>
- Metrolink starts new PTC system, making it the first commuter railroad with the I-ETMS technology. Progressive Railroading: <http://bit.ly/1bB3PEF>
- Gov. Chris Christie's lawyer quits work on a separate Port Authority toll case to avoid a possible conflict of interest. Bloomberg: <http://bloom.bg/1hmNXnx>
- The DOT IG has started audits of the FAA's implementation of a database of pilot records (<http://1.usa.gov/1hmENHG>) and the FAA's oversight of how pilots use flight deck automation (<http://1.usa.gov/1cFhOHS>).
- The N.C. State Ports Authority should have its new leader by March or April. StarNews: <http://bit.ly/1fLGcVJ>

**THE COUNTDOWN:** MAP-21 expires and DOT funding runs out in 219 days. FAA policy is up in 584 days. The mid-term elections are in 253 days and the 2016 presidential election is in 988 days. MLB's Opening Day is in 35 days.

**CABOOSE - National Airport of yore:** Long before Ronald Reagan was having just about everything named after him, it was just plain old National Airport just outside of the District in Virginia. Shorpy delivers this amazing picture from 1940 of the "interior of waiting room showing ticket counter": <http://bit.ly/1mBLnAH>

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=====.

**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Mon 2/24/2014 4:21:06 PM  
**Subject:** 2015 Audi Labels in Verify

Hello Dave;

For Tuesday, could I ask you to please run your label audit report for the nine 2015 Audi labels that are in Verify? Label index 7, is the most important and will be release this week and it would be nice to know if all my values agree with Verify.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Kaul, Meetu[Kaul.Meetu@epa.gov]; Wick, Anne[Wick.Anne@epa.gov]; Choi, Jake[Choi.Jake@epa.gov]; Klepp, Robert[Klepp.Robert@epa.gov]; Adair, Jocelyn[Adair.Jocelyn@epa.gov]  
**From:** Miller, Anthony  
**Sent:** Mon 2/24/2014 5:54:51 PM  
**Subject:** RE: Documents for Defeat Device New Option  
Defeat Device Penalty Policy New Option 02.24.14.docx  
Defeat Device Comparison 12.05.12.xlsx

Hi Everyone,

So everyone is in the loop, there is a slight change of plans on our path forward. We will first meet with Jacqueline to get her reaction and comments, and also include Jocelyn's case with Ex. 7 as an early adopter.

Jake/Meetu,

I will include you both as optional in the meeting with JJ since I know you're both swamped. But, please make sure the numbers for your cases are correct on the spreadsheet.

Please try to review these documents as soon as you can.

Thanks, and my apologies for the quick turnaround! I meant to send this to everyone last week, but pushed save instead of send.

-Tony

Tony Miller  
Chemical Engineer  
OECA/AED/Western Field Office (8MSU)  
1595 Wynkoop Street, Rm 2222  
Denver, Colorado 80202

Tel: 303-312-7161  
Fax: 303-312-6003

Do not release this email. This is deliberative process privileged and may be confidential attorney-client communication.

**From:** Miller, Anthony  
**Sent:** Monday, February 10, 2014 3:53 PM  
**To:** Kaul, Meetu; Wick, Anne; Choi, Jake; Klepp, Robert  
**Subject:** Documents for Defeat Device New Option

Hi Everyone,

Here are the updated documents for your review. I asked Tawanna to set up a meeting with Phill mid-next week to take into account President's day and your review.

I would appreciate it if you could get me your edits by the end of this week.

Thanks!

-Tony

Tony Miller  
Chemical Engineer  
OECA/AED/Western Field Office (8MSU)  
1595 Wynkoop Street, Rm 2222  
Denver, Colorado 80202

Tel: 303-312-7161  
Fax: 303-312-6003

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**From:** Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
**Subject:** Declined: Defeat Device Penalty Policy with JJ  
**Start Date/Time:** Tue 2/25/2014 4:00:00 PM  
**End Date/Time:** Tue 2/25/2014 5:00:00 PM

I'm in all day training tomorrow and Wed.

**From:** Miller, Anthony  
**Required Attendees:** Werner, Jacqueline; Wick, Anne; Klepp, Robert; Adair, Jocelyn  
**Optional Attendees:** Choi, Jake; Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
**Subject:** Defeat Device Penalty Policy with JJ  
**Start Date/Time:** Tue 2/25/2014 4:00:00 PM  
**End Date/Time:** Tue 2/25/2014 5:00:00 PM  
[Defeat Device Comparison 12.05.12.xlsx](#)  
[Defeat Device Penalty Policy New Option 02.24.14.docx](#)

Anne,  
Will you bring your laptop to 1142 again?

Here is the URL:

**Ex. 6**

Documents attached.



**From:** Miller, Anthony  
**Required Attendees:** Werner, Jacqueline; Wick, Anne; Klepp, Robert; Adair, Jocelyn  
**Optional Attendees:** Choi, Jake; Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
**Subject:** Defeat Device Penalty Policy with JJ  
**Start Date/Time:** Tue 2/25/2014 4:00:00 PM  
**End Date/Time:** Tue 2/25/2014 5:00:00 PM  
[Defeat Device Comparison 12.05.12.xlsx](#)  
[Defeat Device Penalty Policy New Option 02.24.14.docx](#)

Anne,  
Will you bring your laptop to 1142 again?

Here is the URL:

**Ex. 6**

Documents attached.

**To:** Brooks, Phillip[Brooks.Phillip@epa.gov]  
**From:** Charlotte Linfoot  
**Sent:** Tue 2/25/2014 11:34:38 AM  
**Subject:** Who will be at World Bio Markets 2014?

Dear Phillip,

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We look forward to seeing you in Amsterdam.

Kind regards,

Dr Charlotte Linfoot  
World Bio Markets Series Director  
T: +44 (0)20 3384 6218  
E: [charlotte.linfoot@greenpowerconferences.com](mailto:charlotte.linfoot@greenpowerconferences.com)

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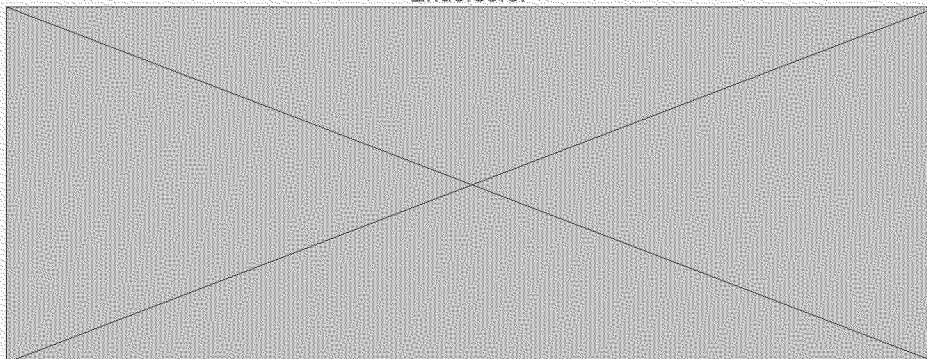
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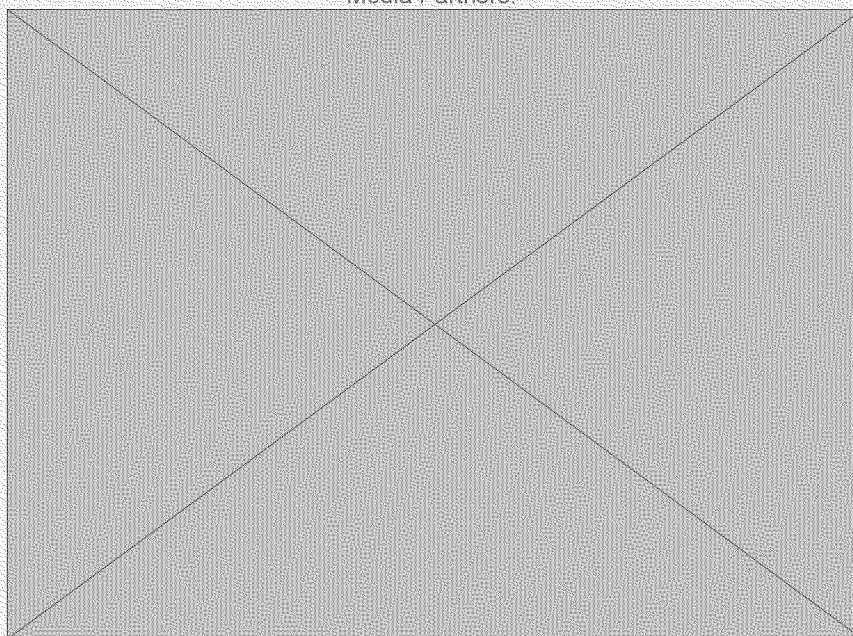




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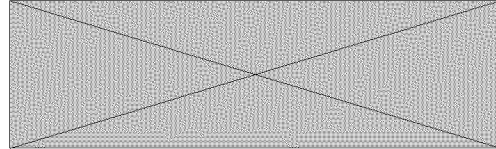
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ack Prince Road, London SE1

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 2/25/2014 1:54:56 PM  
**Subject:** A.M. NEWSCAST: Honda shakes up N.A. ranks, names new U.S. CEO | UAW's strategy for appealing VW vote | GM seeks recall exemption | Geneva show preview

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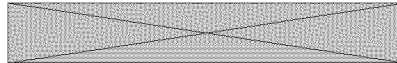
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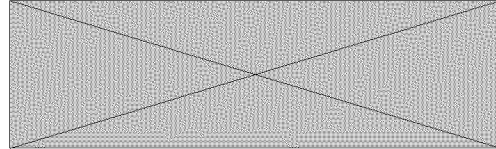
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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 2/25/2014 2:11:49 PM  
**Subject:** A.M. NEWSCAST: Honda shakes up N.A. ranks, names new U.S. CEO | UAW's strategy for appealing VW vote | GM seeks recall exemption | Geneva show preview

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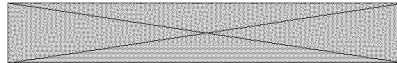
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ANN ARBOR, MICHIGAN 48105-2498

OFFICE OF  
AIR AND RADIATION

December 3, 2009

CISD-09-19 (LDV/LDT)

**SUBJECT: Policy Revisions for Testing Vehicles Equipped with Select-Shift Transmissions, Multimode Transmissions and Shift Indicator Lights (SILs)**

Dear Manufacturer:

This letter revises EPA certification and fuel economy testing policy for vehicles equipped with Select-Shift Transmissions, Multimode Transmissions and Shift Indicator Lights (SILs). These revisions are intended to encourage manufacturers to improve in-use fuel economy and reduce testing burden for the Industry (especially for 5-cycle fuel economy labeling requirements,<sup>1</sup> which are optional for 2008-2010 model year vehicles and required for some 2011 and later model year vehicles).

This new policy is optional for 2009 and 2010 model year vehicles and applicable to 2011 and later model year vehicles.

**Regulatory Background** – The provisions of 40 CFR 86.128-00 provide the basis for shifting certification vehicles equipped with automatic and manual transmissions. The provisions of 40 CFR 600.111-08 provide the basis for shifting fuel economy vehicles (which reference the provisions of 40 CFR 86.128-00). The provisions of 86.128-00(a) reads as follows:

“All test conditions, except as noted, shall be run according to the manufacturer’s recommendations to the ultimate purchaser, *Provided*, That: Such recommendations are representative of what may reasonably be expected to be followed by the ultimate purchaser under in-use conditions.”

**Driver-Selectable Devices (includes “Select-Shift” and “Multimode” Transmissions)**

Enclosure 1 provides EPA guidance for vehicles equipped with driver-selectable devices. For the purposes of this letter, “Select-Shift” transmissions are defined to be a type of semi-automatic transmission with driver controls which permits the automatic transmission to be shifted like a conventional manual transmission. In the manual mode, select-shift transmissions commonly use buttons or paddles located on the steering wheel or a toggle switch type of floor mounted gear lever to upshift and downshift the vehicle. Also for the purposes of this letter, “multimode” transmissions are defined in Advisory Circular 83A to mean “an automatic, a manual or semi-automatic transmission that has an operator selectable feature that changes

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<sup>1</sup> 71 FR 77872, December 27, 2006



transmission parameters such as gear ratios or automatic transmission shift speed calibrations. Electronic overdrive features or variable lockup calibration features are not considered multi-mode transmissions.” Unlike select-shift transmissions which allow the driver to make gear changes, multimode transmissions commonly have buttons or switches which allow the driver to select various power, normal, economy and overdrive lockout operating modes, (sometimes called eco, econ, intelligent, sport, sport-sharp, super-sport, tow/haul, and overdrive off modes). This letter supersedes previous select-shift and multimode transmission guidance provided in EPA guidance letters CCD-02-10 dated July 12, 2002; CCD-01-025R, dated December 17, 2001; and CD-87-01, dated January 23, 1987.

### **Shift Indicator Lights (SILs)**

Enclosure 2 provides EPA guidance for vehicles equipped with SILs. For the purposes of this letter, SILs are defined in Advisory Circular 83A as follows: “The SIL is a light that indicates when the driver should shift to the next higher gear. EPA will consider vehicles equipped with a SIL or similar acceptable device and vehicles without a SIL or similar acceptable device as separate transmission classes.” The guidance provided in this letter supersedes previous SIL guidance except for carryover SIL shift schedules. Previous SIL guidance was provided in EPA Advisory Circular 72A (pages 3, 4 and 12); EPA guidance letters CD-87-06, dated April 30, 1987; CD-83-10, dated June 22, 1983; and CD-82-10, dated December 22, 1982.

### **Sample Select Shift Survey Questionnaire**

Enclosure 3 provides a sample select shift survey questionnaire that manufacturers may use to conduct their surveys.

If you have questions about this letter, please contact Dave Good by e-mail at [good.david@epa.gov](mailto:good.david@epa.gov) or by telephone at 734-214-4430.

Sincerely,



Karl J. Simon, Director  
Compliance and Innovative Strategies Division  
Office of Transportation and Air Quality

Enclosures

**Enclosure 1 to CISC-09-19**  
**Testing Requirements for Vehicles Equipped with Driver-Selectable Devices**  
**(includes "Select-Shift" and "Multimode" Transmissions)**

**Background**

This letter supersedes previous select-shift and multimode transmission guidance provided in EPA guidance letters CCD-02-10 "Errata Correction to Dear Manufacturer Letter CCD-01-25 issued December 17, 2001: Policy Revisions to Fuel Economy Testing of Vehicles Equipped with Select-Shift Automatic Transmissions," dated July 12, 2002; CCD-01-025R, "Policy Revisions to Fuel Economy Testing of Vehicles Equipped with Select-Shift Automatic Transmissions," dated December 17, 2001 and revised July 10, 2002; and CD-87-01, "Current Policy on Driver-Selectable Devices," dated January 23, 1987.

Our basic driver-selectable transmission policy is as follows:

- EPA is handling driver-selectable devices on a case-by-case basis.
- Barring substantial evidence that the vehicle will be driven predominantly in one mode, we will test the vehicle in both modes (or the two extreme modes if more than two modes exist), and harmonically average the results for use in fuel economy calculations. The term "predominant" means "nearly total usage of a given selectable mode" such as the use of "Drive" versus "2" in an automatic transmission.
- Vehicles should comply with emission standards in any mode (i.e., no defeat devices). EPA may perform confirmatory testing and in-use surveillance testing in any of the driver-selectable modes. However, if EPA performs confirmatory testing on a certification or fuel economy vehicle in a mode that is not used for fuel economy, the additional EPA tests should not be used in the fuel economy calculations.

This guidance is provided for vehicles equipped with typical select shift and multimode transmissions. Please contact EPA in advance to request guidance for vehicles equipped with future technologies not covered by this document, unusual default strategies or driver selectable features, e.g., hybrid electric vehicles where the multimode button or switch disables or modifies any fuel saving features of the vehicle (such as the stop-start feature, air conditioning compressor operation, electric-only operation, etc.). Normally, manufacturer requests should include a detailed description of the select shift/multimode operation, a copy of the owner's manual description, expected 5-cycle fuel economy data, and a vehicle supplied to EPA for a short drive evaluation.

## **Definitions**

**Advertised Horsepower** - Advertised horsepower should be based on SAE surface vehicle standard J2723. For hybrid electric vehicles, the advertised horsepower shall also include the electric power of the vehicle, e.g. the advertised electric motor rating<sup>2</sup> in kilowatts while operating with the battery at the maximum operating state of charge (converted to horsepower using the factor of 1.34 horsepower/kilowatt).

**Driver Selectable Transmissions** – For purposes of this guidance document, a class of transmissions comprised of select-shift transmissions and multi-mode transmissions.

**Equivalent Test Weight (ETW)** – For purposes of this guidance document, ETW means the equivalent test weight setting used for FTP testing. See 40 CFR 86.129-94.

**Multimode Transmission** – For the purposes of this letter, “multimode” transmissions are defined in Advisory Circular 83A to mean “an automatic, a manual or semi-automatic transmission that has an operator selectable feature that changes transmission parameters such as gear ratios or automatic transmission shift speed calibrations. Electronic overdrive features or variable lockup calibration features are not considered multimode transmissions.” Unlike select-shift transmissions which allow the driver to make gear changes, multimode transmissions commonly have buttons or switches which allow the driver to select various power, normal economy and overdrive lockout operating modes (sometimes called eco, econ, intelligent, sport, sport-sharp, super-sport, tow/haul, and overdrive off modes).

**Predominance Criteria** – At least 75% of drivers will have at least 90% of the vehicle shift operation performed in one mode, and on average, 75% of vehicle shift operation is performed in that mode.

**Predominant Driver Selectable Mode** – The driver selectable mode for which shift survey data meets the predominance criteria.

**Select-Shift Transmission** - A number of recent model year vehicles have been designed with driver-controllable gear shift capability which permits the automatic transmission to be shifted in a manner similar to a conventional manual transmission. These transmissions are known by a variety of names, but for purposes of this letter, EPA will call these automatic transmissions "select-shift" transmissions. The select-shift transmissions can generally fall into several types: those which permit shifting between gear ranges, for example, a five speed transmission with the gear ranges 1-2, 1-2-3, 1-2-3-4, and 1-2-3-4-5 and those which may use the select-shift transmission to engage specific individual gears. A third type is those which are designed to function with continuously variable transmissions (CVTs).

**Weight-to-Horsepower Ratio** – ETW/advertised horsepower.

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<sup>2</sup> At this time, EPA is unaware of a standard method of determining the rated power of automobile electric propulsion motors, e.g. an SAE recommended practice. Therefore, prior EPA approval is required.

### **Basic Default Driver-Selectable Transmission Mode Testing Policy**

Manufacturers not meeting the predominance requirements set forth below or choosing not to conduct a survey will be required to submit fuel economy data from the vehicle tested in the two extreme modes, and harmonically average the two sets of test results. Vehicle-specific 5-cycle FE labels (if applicable) shall be based on harmonically averaged test results/bag data for FTP, highway, US06, SC03 and Cold temperature FTP tests. Highway FE Label values using the modified 5-cycle method outlined in 40 CFR 600.115-08(b)(2)(iii)(B) (commonly called the 3-cycle method) shall be based on two sets of harmonically averaged test results/bag data for FTP, highway and US06 tests.

Optionally, manufacturers may test in the worst case (fuel economy) mode only.

### **Predominant Driver-Selectable Transmission Mode Testing Policy**

Manufacturers meeting the predominance requirements set forth below have the option to submit fuel economy data from the vehicle tested in the predominant mode only. Vehicle-specific 5-cycle FE labels (if applicable) shall be based on the predominant mode test results/bag data for FTP, highway, US06, SC03 and Cold temperature FTP tests. Highway FE Label values using the modified 5-cycle method outlined in 40 CFR 600.115-08(b)(2)(iii)(B) (commonly called the 3-cycle method) shall be based on the predominant mode test results/bag data for FTP, highway and US06 tests.

### **Establishing the Predominant Driver-Selectable Mode**

Unless manufacturer's previous survey data indicate otherwise, the predominant mode will be the "key-off" (default) mode for vehicles meeting the following criteria:

- A "key-off" (default) mode has been established by the manufacturer.
- The manufacturer provides driver education information regarding all driver-selectable modes to the ultimate purchaser.
- For vehicles with multimode transmissions but without SST, the weight-to-horsepower ratio is greater than or equal to 12.0 to 1
- For SST-equipped vehicles-
  1. Weight-to-horsepower ratio is greater than 15.0 or
  2. Weight-to-horsepower ratio is greater than or equal to 12.0, but less than or equal to 15.0 and the driver must remove a hand from the steering wheel in order to upshift and downshift the SST (regardless of whether or not the driver needs to remove a hand from the steering wheel in order to activate the SST).

Assuming that the requirements listing in the first two bullet items have been met, Table 1 shows the various scenarios described above.

**Table 1. Testing Allowance for Default-Equipped Vehicles.**

<b>Multimode</b>	<b>SST</b>	<b>ETW/Power</b>	<b>Test in Default Only Allowed?*</b>
Yes	Yes	<12.0 12.0-15.0 >15.0	No Yes, if driver must remove hand from the steering wheel to upshift and downshift SST Yes
Yes	No	<12.0 ≥12.0	No Yes
No	Yes	<12.0 12.0-15.0 >15.0	No Yes, if driver must remove hand from the steering wheel to upshift and downshift SST Yes
*Default-only test allowance may be carried over for products with ETW/Power changes less than 5% from original.			

For vehicles which default to the “best fuel economy” mode on key-off, manufacturers may perform EPA fuel economy testing in the “best fuel economy” mode because this mode would “reasonably be expected to be followed by the ultimate purchaser under in-use conditions;” ref. 40 CFR 86.128-00. In addition to defaulting to the “best fuel economy mode” on key-off, EPA encourages manufacturers to:

- calibrate vehicles with “green” adaptive (block learn) fuel economy strategies;
- calibrate vehicles to minimize the operation of the air conditioning compressor; and
- reset the defroster to the “off” position on key-off;

Fuel economy tips and “driver education” could include brochures provided when purchasing a new vehicle and/or information provided to the operator by the on-board vehicle information system. For example, the on-board vehicle information system could provide messages to the driver that the ambient temperature is sufficiently low so that air-conditioning is not needed; that minimizing defroster operation improves the fuel economy of the vehicle; that moderate braking and coasting techniques provide more battery regeneration for hybrid vehicles than hard braking, etc.

If a predominant mode cannot be established by the criteria above, the manufacturer has the option to conduct a survey to establish the predominant mode. Table 2 provides minimum testing requirements for survey outcomes.

**Table 2. Minimum Testing Requirements for Various Survey Outcomes**

<b>Survey Outcome</b>	<b>Minimum Testing</b>
SST is predominant*	SST mode only
Full Auto mode is predominant*	Test in predominant mode* only. If no predominant multimode, test worst & best case fuel economy multi-mode settings or (with prior EPA approval) in the two most prevalent multi-mode settings.
Neither SST, nor full Auto mode is predominant*	Worst & best case fuel economy transmission settings or (with prior EPA approval) the two most prevalent transmission settings
<i>* According to EPA predominance criteria</i>	

### **Driver-Selectable Mode Survey Design**

The following survey design criteria are requirements for determining the usage rate of the driver-selectable modes:

- The survey shall be conducted by telephone or mail and be designed to obtain unbiased quantitative estimates of select-shift and multimode usage. For example, vehicles equipped with select shift and multimode (normal, sport and super sport) modes shall determine the percent of shifting in the SST (normal) mode, the full automatic normal mode, the fully automatic sport mode and the fully automatic super sport mode.
- Preferably, the survey shall be conducted by an independent survey organization.
- The survey respondents shall be the principal drivers of the vehicles and have driven the vehicles for several months.
- The minimum survey sample size is the lesser number of 30 percent of vehicle sales, or 50 respondents.
- Carlines may be combined into a single survey if they are sufficiently similar so as to generate equivalent usage rates. Manufacturers should make these grouping decisions using good engineering judgment. Survey results from these combined carline surveys should be analyzed to assure that respondents from each carline have similar usage rates. If the usage rates significantly vary between carlines initially grouped together for survey purposes, the manufacturer will separate the carlines and collect additional survey responses to meet the minimum 50 responses for each survey.
- If a manufacturer wishes to use its employees as participants, the manufacturer must assure EPA that no bias will be introduced and the method of selecting participants must be approved in advance by EPA.

- With prior EPA approval, properly designed web-based surveys may be used, provided the customer supplies the VIN of their vehicle to authenticate their responses; the vehicle is equipped with the proper engine and transmission; and the principle driver of the vehicle completes the web-based survey questions.
- The shift usage survey should be combined with other questions not related to select-shift transmissions, but the survey should ask the principal driver of a qualifying vehicle "to estimate, the percent of shifting done in the select-shift usage mode."<sup>2</sup>
- Compliance with the predominance criteria shall be calculated from an analysis of the responses and the corresponding usage rates.

**Manufacturers should exercise good engineering judgment in making decisions. EPA will not approve the shift survey in advance, except for approving the general design of web-based surveys. EPA reserves the right to examine the survey and the results.**

A generic survey is provided in Enclosure 3.

#### **Alternative Methods for Determination of Usage Rates**

1. Manufacturers may also determine driver-selectable mode usage rates by instrumenting a vehicle or vehicles and logging driver-selectable mode position shift events using at least 15 representative drivers using either a) a road route similar to the road route outlined in EPA Advisory Circular No. 72A or b) typical in-use driving conditions for a representative period, e.g. a week or more. The instrumented vehicle(s) may be provided by the manufacturer or the vehicle owner, but the driver should be the principal driver of a vehicle equipped with a driver-selectable device which they have driven for several months.
2. Manufacturers may determine driver-selectable mode usage rates by collecting data from the onboard Powertrain and/or Transmission Control Module (PCM and/or TCM), provided that the vehicle is so designed and equipped. Such data may be collected from customer vehicles when brought to the dealership for maintenance. Driver-selectable mode position shift events shall be logged from at least 15 representative drivers determined to have experienced typical in-use driving conditions for a representative period, eg., one week or more.
3. Manufacturers should use good engineering judgment to assure that the vehicle is operated over a mix of city and highway conditions reflective of legal speeds in certification and fuel economy test procedures. Cold temperature operation is not required. Preferably, company drivers should not be used. If a manufacturer wishes to use its employees as participants, the manufacturer must assure EPA that no bias will be introduced and the method of selecting participants must be approved in advance by EPA. The purpose of the survey shall be masked (unknown to the vehicle operators).

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<sup>2</sup> Because some select-shift transmissions may access the selection of gears or gear ranges from the "Drive" position, as opposed to a separate shift gate position, some manufacturers will need to use a different metric to determine the correct usage rate of the select-shift mode. An alternative metric should be quantifiable and based on good engineering judgment.

An analysis of the shift events shall be made on an individual driver basis to determine the percentage of driver-selectable mode position shift usage. Driver-selectable mode usage rates for each driver are then compared against the previously described predominance criteria. In addition, for vehicles equipped with a select-shift transmission, the shifting data may be analyzed on an individual vehicle basis to determine an appropriate shift schedule to use for fuel economy tests performed in the manual mode.

### **Survey Requirements and Fuel Economy Submissions for First Year Vehicles with Driver-Selectable Modes**

If the manufacturer is unable to establish a predominant mode prior to production of the first model year of a driver-selectable device design, the manufacturer may submit fuel economy data for one mode, provided they use good engineering judgment in the selection of that mode. However, survey results should be obtained before the end of the model year, and depending on the results, actions may be required under EPA fuel economy regulations. Survey requirement applicability depends on the weight-to-horsepower ratio for tested subconfigurations, as described in "Establishing the Predominant Driver-Selectable Mode" section below.

If the survey results meet the predominance criteria for the tested mode, no additional actions are required. If the survey results fail to meet the predominance criteria for the tested mode, the vehicle manufacturer should comply with the following:

- (a) Run fuel economy tests in the two extreme modes or, alternatively, (with prior EPA approval) in the two most prevalent modes.
- (b) Recalculate label values under §600.314-08(e)(2) based on harmonically averaged data from paragraph (a) above.
- (c) If necessary, under §600.314-08(e)(4)
  - (i) Re-label all affected vehicles
  - (ii) Update the entire label, including the Gas Guzzler Tax, under §600.314-08(e)(5).
- (d) CAFE will be based on harmonically averaged data.

### **Overdrive Lockout Policy**

Some multimode transmissions contain selectable modes that are designed for non-standard operation and would be deemed not reasonable for normal driving. For example, some multimode transmissions are equipped with an overdrive lockout button/switch (sometimes called a "Tow/Haul" switch). Some are equipped with a "Hold" button which holds the transmission in gear and prevents upshifts, e.g. for mountain driving. Some are equipped with a "Snow" mode for use in snowy (low traction) conditions. For these types of overdrive lockout buttons and switches, fuel economy testing is not necessary in these modes, provided the vehicle defaults to the normal operating mode (with overdrive enabled) on key-off. If the vehicle does not default to the normal operating mode on key-off, fuel economy testing and FE Label



requirements are the same as with any multimode button/switch, provided a vehicle driven in such a mode can follow drive traces for the regulated emissions and fuel economy test cycles.

### **Driver-Selectable Mode Testing in Support of 2011 and Later Model Year Fuel Economy Labels**

Beginning with the 2011 model year, manufacturers are required to determine the FE Labeling methodology (mpg-based derived 5-cycle method, the vehicle-specific 5-cycle method, or for highway values the modified 5-cycle method) based on the 5-cycle tests of the certification vehicle, ref. 40 CFR 600.115-08(a)(3), (b) and (b)(2)(iii)(B). For these 5-cycle certification tests, manufacturers should use good engineering judgment to determine the worst case mode for emissions (in aggregate, considering all regulated emission constituents and all test procedures) and use that mode for all 5-cycle certification tests

### **Survey Considerations for Small Volume Vehicles**

With prior EPA approval, special survey considerations will be allowed on a case-by-case basis for small volume vehicles, e.g. if the manufacturer has difficulty obtaining the minimum response rate. For example, EPA may approve surveys below the minimum sample size (if the results of the survey are statistically corrected to the 95<sup>th</sup> percent confidence level). EPA may approve manufacturers' requests to survey company employees provided the purpose of the survey is masked from the employee.

### **Carry-over/Carry-across of Driver-Selectable Mode Shift Survey Results**

Vehicle manufacturers wishing to produce driver-selectable device vehicles in subsequent model years may carry-over the survey results for a carline/engine/transmission combination from one model year to another (or carry-across within the same model year) based on good engineering judgment for driver-selectable designs which cover vehicles which have the same or similar criteria:

- Carline, or combined carlines based on good engineering judgment
- Basic mode calibration strategy
- Location and actuation of the select-shift control
- Shift gate pattern

Shift survey results may not be carried over for more than 4 years (5 years total) without prior EPA approval. EPA does not expect to approve carryover requests beyond 10 years (11 years total) except in very rare cases.

Additionally, manufacturers may carryover and carry-across survey results from higher performance to lower performance carline/engine/transmission combinations, as follows:

- **Case 1: Hierarchy for Different Engines:** Surveys may be carried over and carried across from higher horsepower to lower horsepower engines (e.g. from V8s to V6s to 4-cyl engines).

- **Case 2: Hierarchy for Similar Carlines:** Surveys may be carried over and carried across from carlines with higher power/weight ratio to similar carlines with lower power to weight ratio.
- **Case 3: Hierarchy for Different Carlines:** Surveys may be carried over and carried across in the following hierarchy: from two-seaters to 2/4-door sedans, minivans and/or family type SUVs; from 2/4-door sedans, minivans and/or family type SUVs; between minivans and/or family type SUVs; and from high performance SUVs to family type SUVs.
- **Case 4: Flexibility for Different Transmissions:** Surveys may be carried over and carried across to vehicles equipped with different types of transmissions (e.g. from conventional hydraulic automatic transmission to a direct drive clutch-type automatic transmission) and regardless of the number of forward gears, e.g. from S6 to S5 and S4 transmissions and from S4 to S5 and S6 transmissions.

Manufacturers should provide EPA with a summary of the carryover and carry-across decisions which they have made in their annual certification preview meeting.

#### **Carry-over/Carry-across of Driver-Selectable Mode Fuel Economy Data**

EPA's carry-over and carry-across policy is outlined in Advisory Circular 17F (Subject: General Criteria for the Carryover and Carry-Across of Certification Data and the Carryover of Fuel Economy Data for Light-Duty Vehicles and Light-Duty Trucks). In general, carryover and carry-across of fuel economy data from vehicles equipped with driver-selectable modes will be allowed if the new vehicle differed from the tested vehicle in ways which the manufacturer's good engineering judgment would indicate that the new vehicle would have equivalent or superior fuel economy characteristics (including the shifting characteristics).

#### **Effective Date of Guidance**

Manufacturers may optionally use the select shift guidance provided above in the 2009 and 2010 model years and should use the guidance provided above for the 2011 and subsequent model years.

**Enclosure 2 to CISC-09-19**  
**Testing Requirements for Vehicles Equipped with Shift Indicator Lights (SILs)**

**Background**

This letter supersedes previous SIL guidance, except that previous SIL shift schedules may be carried-over until the vehicle platform is phased out. Previous SIL guidance was provided in EPA Advisory Circular (A/C) 72A (pages 3, 4 and 12); EPA guidance letters CD-87-06, dated April 30, 1987; CD-83-10, dated June 22, 1983; and CD-82-10, dated December 22, 1982.

Previous guidance normally resulted in dual testing; test vehicles were shifted with and without the SIL. Previous guidance then weighted the results of the city and highway tests using a SIL usage factor determined by a letter or telephone questionnaire of in-use vehicle owners. The new SIL testing policy outlined in this letter eliminates dual testing requirements and relies on an instrumented vehicle survey (e.g. on a prototype vehicle) to determine the appropriate shift schedule for SIL-equipped vehicles.

SILs are described in A/C 72A as follows: "Shift indicator lights (SILs) are designed to improve fuel economy by encouraging drivers to shift at the lowest practical speed for each gear. A light, usually located in the instrument panel, illuminates to prompt a shift as soon as vehicle operating conditions would allow acceptable performance in the next gear."

SILs determine a separate transmission class, as outlined in A/C 83A, as follows: "The SIL is a light that indicates when the driver should shift to the next higher gear. EPA will consider vehicles equipped with a SIL or similar acceptable device and vehicles without a SIL or similar acceptable device as separate transmission classes."

**Testing Policy for Vehicles Equipped with SILs**

For reasons discussed in EPA guidance letter CD-87-06, April 30, 1987, and in light of the 5-cycle fuel economy testing requirements (optional for 2008 and later model year vehicles, and required for some 2011 and later vehicles) EPA is revising the previous testing policy for vehicles equipped manual transmissions and SILs. Dual testing will no longer be allowed, except for carryover vehicles which were tested prior to the 2010 model year. EPA will accept shift schedules for manual transmission vehicles equipped with SILs using one of three approaches outlined in A/C 72A, as follows:

- standard shift speeds 15, 25, 40, 45, 50 mph (or higher)
- rpm based percent of rated engine speed, or
- survey-based (using an instrumented vehicle driven over a representative road route).

Alternatively, EPA will accept shift schedules for manual transmission SIL vehicles based on an in-use shift point survey of customer-owned vehicles or company-owned vehicles when driven for a sufficient number of miles over a mix of city and highway conditions (including opportunities for hard accelerations) reflective of legal speeds encountered on regulated fuel economy and emissions tests.

## **SIL Instrumented Vehicle Shift Point Survey Design**

The shift point survey should follow the guidance of A/C 72A, paragraph V, with the following exceptions and reminders:

- Preferably, the survey shall be conducted by an independent survey organization.
- Vehicle instrumentation shall be concealed from the participant.
- Drivers shall not know the purpose of the survey
- **EPA approval is not required.** Manufacturers should use good engineering judgment to assure that the survey route and survey design meets the guidelines of A/C 72A and this guidance letter.
- **Sample Size:** Minimum sample size is unchanged from A/C 72A (at least 15 drivers).
- **Sample Composition:** Sample composition is unchanged from A/C 72A.
- **Survey Groups:** Survey groups are unchanged from A/C 72A, except that manufacturers may use good engineering judgment to combine carlines into a single survey if they are sufficiently similar.
- **Test Vehicle Configurations:** From the group of test vehicles to be represented, the survey vehicle(s) shall be the worst case in terms of advertised horsepower, transmission characteristics, vehicle weight, N/V ratio, plus Case 2 and 3 carline hierarchies outlined in the carry-over section of Enclosure I. [N/V is the engine speed to vehicle speed ratio. EPA has determined that a lower N/V ratio is worst case for shifting.]
- **Road Route:** The survey route should include a mix of city, highway & US06 driving. Alternately, the survey may be conducted over typical in-use driving conditions for a representative time period, e.g. two weeks or more.
- **Data Analysis:** The data shall be analyzed to estimate the shift points used for acceleration and cruise modes using the method provided in A/C 72A (including paragraphs pertaining to data point identification, data rejection, and data analysis) or another Industry-wide method acceptable to EPA.

Other survey designs may be used with prior EPA approval. EPA reserves the right to examine the survey and the results.

## **SIL Testing in Support of 2011 and Later Model Year Fuel Economy Labels**

Manufacturers should use good engineering judgment to assure that surveys are representative of consumer driving over the 5-cycles (FTP, highway, US06, SC03 and Cold temperature FTP), except that cold temperature operation is not required. Shifting for the highway portion of the US06 test may be determined from the survey data (e.g., based on customer shifting during US06 type of accelerations) or delaying shifts in order to follow the US06 cycle as outlined in Advisory Circular 72A, Section IV. B. (page 6).

Beginning with the 2011 model year, manufacturers are required to determine the FE Labeling methodology (mpg-based derived 5-cycle method, the vehicle-specific 5-cycle method, or for highway values the modified 5-cycle method) based on the 5-cycle tests of the certification vehicle, ref. 40 CFR 600.115-08(a)(3), (b) and (b)(2)(iii)(B). For these 5-cycle certification tests,

manufacturers should perform 5-cycle certification tests using shift schedules developed for SIL vehicles using the guidance provided in this letter. For carryover shift schedules based on dual testing approaches, manufacturers should perform certification tests with and without the SIL (for all 5-cycle certification tests) and **harmonically average the SIL and non-SIL fuel economy data** for each of the five cycles to determine the FE Labeling methodology. Please notify EPA if there are problems shifting SIL vehicles on the SC03, US06 and cold temperature FTP tests, e.g. if drivers have difficulty shifting vehicles when the SIL illuminates on the US06 test.

### **Survey Considerations for Small Volume Vehicles**

With prior EPA approval, special survey considerations may be allowed on a case-by-case basis for small volume manufacturers and for small volume vehicles. However, EPA does not expect that special considerations will be needed for SIL vehicles. For example, special survey considerations will likely not be needed to meet the survey minimum sample size requirements because participants can be owners of any SIL-equipped manual transmission vehicle. Additionally, small volume manufacturers are expected to use the standard shift schedule or the rpm-based shift schedules outlined in A/C 72A, sections IV. A. 1 and A. 2 instead of the survey-based shift schedules outlined in A/C 72A section IV. A. 3.

### **Testing Policy for Vehicles with Select-Shift, Multimode Buttons/Switches and SILs**

Vehicles equipped with select shift transmissions, multimode buttons/switches and SILs will be evaluated on a case-by-case basis. Manufacturers may test select shift vehicles equipped with SILs in the manual mode based on one of the shifting methods outlined in Advisory Circular 72A, and this guidance letter. Normally, we expect select shift vehicles to be shifted manually using the standard shift schedule, 15, 25, 40, 45, 50 mph (or higher). However, as discussed in the Instrumented Vehicle Alternative section of Enclosure I, manufacturers may analyze data collected in an instrumented vehicle survey to determine how the select-shift vehicle should be shifted in the manual mode (which would account for the presence of the SIL). Multimode buttons/switches are currently not offered on manual transmission SIL vehicles.

### **Carry-over/Carry-across of SIL Shift Survey Results**

Vehicle manufacturers wishing to produce SIL vehicles in subsequent model years may carry-over the survey results for a carline/engine/transmission combination in one model year to another (or carry-across within the same model year) based on good engineering judgment for SIL designs which cover vehicles with the same or similar criteria:

- Carline, or combined carlines based on good engineering judgment
- Location and visibility of the SIL
- SIL calibration (e.g. vehicle speed, engine rpm when the light activates)

Based on good engineering judgment, manufacturers may carryover/carry across non-SIL survey results to SIL-equipped vehicles for similar carlines provided the SIL illuminates at vehicle speeds lower than or equal to the shift points that resulted from the non-SIL survey.

Previous SIL usage factors (for dual testing) and SIL shift schedules developed using this guidance letter (using one shift pattern) may be carried over and carried across to vehicles and carlines where manufacturers' good engineering judgment indicates that the survey vehicle was worst case in terms of advertised horsepower, transmission characteristics, vehicle weight, N/V ratio, plus Case 2 and 3 carline hierarchies outlined in the carryover section of Enclosure I. Survey results may be carried over until the vehicle platform is redesigned (e.g., until the powertrain is phased out). Manufacturers should document the rationale for carry-over/carry-across in the application for certification. Manufacturers should provide EPA with a summary of the carryover and carry-across decisions which they have made in their annual certification preview meeting.

Previous SIL shift schedules (developed under EPA guidance letters CD-87-06, CD-83-10 and CD-82-10) may be carried-over until the vehicle platform is phased out. As outlined in these guidance letters, appropriate SIL usage factors were determined from responses to customer questionnaires. The usage factor was then used in model type calculations to weight the SIL and non-SIL city and highway tests. SIL usage factors from previous surveys may be carried over provided the model type fuel economy values are based on the weighted **harmonic average of the SIL and non-SIL pairs of city, highway, US06, SC03 and cold FTP tests, as applicable.**

#### **Carry-over/Carry-across of SIL Fuel Economy Data**

Same as select-shift carry-over/carry-across policy outlined in Enclosure I.

#### **Survey Requirements and Fuel Economy Submissions for First Year Vehicles with SILs**

In order to establish shift schedules for first year SIL vehicles, manufacturers may perform SIL surveys "prior to actual production start-up by using prototype vehicles; ref. CD-87-06, April 30, 1987. However, if a manufacturer is unable to complete a pre-production shift speed survey, with prior EPA approval the manufacturer may establish a shift schedule using good engineering judgment. The underlying assumption will be that the shift points will occur at speeds between the standard shift speeds (15, 25, 40, 45, 50 mph) and the calibrated SIL shift speeds. In this case, the manufacturer would be required to perform a shift speed survey in compliance with the aforementioned survey requirements before the end of the model year. If the good engineering judgment shift schedule differs significantly from the survey-based shift schedule, the manufacturer may have to take remedial action (e.g., relabel as outlined in Enclosure I, in the section titled "Survey Requirements and Fuel Economy Submissions for First Year Vehicles with Driver-Selectable Modes," as applicable). Regardless of the result, the survey-based shift schedule will become the official shift schedule for subsequent model years.

Normally, manufacturer requests to base first year shift schedules on good engineering should include a detailed description of the SIL operation, a copy of the owner's manual description, expected 5-cycle fuel economy data, and a vehicle (equipped with a production SIL) supplied to EPA for a short drive evaluation<sup>1</sup>.

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<sup>1</sup> The purpose of EPA's drive evaluation is to evaluate the location and visibility of the SIL and to evaluate the overall robustness of the SIL calibration, including drivability of the vehicle at the SIL-indicated shift points. For example, the vehicle should not hesitate, stall or stumble when shifted according to the SIL.

**Effective Date of SIL Guidance**

Manufacturers may optionally use the SIL guidance provided above in the 2009 and 2010 model years and should use the guidance provided above for the 2011 and subsequent model years.

**Enclosure 3 to CISD-09-19**  
**Sample Select Shift Survey Questionnaire**

Name: \_\_\_\_\_ Odometer: \_\_\_\_\_ Primary Phone Number \_\_\_\_\_  
Address: \_\_\_\_\_ Alternate Phone Number \_\_\_\_\_

Please have the person who is the primary operator of the <2010> model year vehicle \_\_\_\_\_ (enter model type) registered at your address answer the following questions:

1. What is the age of the person who is the primary operator of the vehicle?

Age: 16-20 \_\_\_\_\_ 21-25 \_\_\_\_\_ 26-30 \_\_\_\_\_ 31-38 \_\_\_\_\_ 39-49 \_\_\_\_\_ 50-60 \_\_\_\_\_ 61+ \_\_\_\_\_

2. How long have you been driving the vehicle? \_\_\_\_\_ Years \_\_\_\_\_ Months

3. How many total hours on average do you drive your vehicle per week? \_\_\_\_\_ Hours

4. What percentage of your weekly driving time is spent in city type traffic? \_\_\_\_\_ Percent

5. Are you aware that you can shift your vehicle to simulate a manual transmission using the <steering wheel paddles> or <transmission shift lever>? \_\_\_\_\_ YES \_\_\_\_\_ NO

6. How often do you shift your vehicle using the <paddles to simulate a manual transmission?> or <shift lever to simulate a manual transmission by actuating the shift lever in the plus (+) or minus (-) shift lever positions?>

\_\_\_\_\_ Occasionally \_\_\_\_\_ Usually \_\_\_\_\_ Very rarely \_\_\_\_\_ Never

7. Please estimate the average percent of time that you use the <paddles> or <shift lever> to simulate a manual transmission compared to the percent of time in the automatic mode.

\_\_\_\_\_ Percent of time in manual mode \_\_\_\_\_ Percent of time in automatic mode

8. **{If applicable}** While in the automatic mode, what percent of the time is spent in the “Normal,” mode, the “Sport” mode, and the “Super Sport” mode?

\_\_\_\_\_ Percent of time in the “Normal” mode \_\_\_\_\_ Percent of time in the “Sport” mode

\_\_\_\_\_ Percent of time in the “Super Sport” mode \_\_\_\_\_ Don’t know

9. Are you mostly satisfied with your vehicle fuel efficiency of your vehicle? \_\_\_\_\_ YES \_\_\_\_\_ NO

10. Are you mostly satisfied with your vehicle performance? \_\_\_\_\_ YES \_\_\_\_\_ NO

Comments:

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**To:** Good, David[good.david@epa.gov]  
**From:** Ex. 7  
**Sent:** Tue 2/25/2014 3:47:41 PM  
**Subject:** RE: EPA guidance letter for Predominant modes

Awesome. Thanks, Dave!

**Ex. 7**

California Air Resources Board

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**From:** Good, David [good.david@epa.gov]  
**Sent:** Tuesday, February 25, 2014 7:00 AM  
**To:** Ex. 7  
**Subject:** RE: EPA guidance letter for Predominant modes

Ex. 7

Conventional hybrids must meet the criteria pollutant emission standards in any mode, per the third bullet on page 1 of the enclosure of the attached EPA guidance letter (CISD-09-19).

EPA hasn't issued a guidance letter for PHEVs. As outlined in the slides of the 11/6/2013 EPA/ARB/Industry meeting, we currently use the defeat device policy to evaluate compliance with criteria pollutant standards in the CD mode. In the CS mode, PHEVs must also meet the criteria pollutant emission standards in any mode (as outlined above).

Dave

**From:** Ex. 7  
**Sent:** Monday, February 24, 2014 12:51 PM  
**To:** Good, David  
**Subject:** FW: EPA guidance letter for Predominant modes

Hi, **Ex. 7**

Has EPA issued a guidance letter that is similar to the one found at the following link that you use to decide which modes of a hybrid must meet criteria pollutant exhaust emission standards if the vehicle has driver-selectable (push button) modes? Or do you require these vehicles to meet the applicable standards under all operating modes? Thanks

**Ex. 7** M.S.A.E., P.E.

Staff Air Pollution Specialist

Emissions Compliance, Automotive Regulations and Science Division

California Air Resources Board

**From:** **Ex. 7**  
**Sent:** Friday, February 21, 2014 2:36 PM  
**To:** **Ex. 7**  
**Cc:** **Ex. 7**  
**Subject:** EPA guidance letter for Predominant modes

Hi **Ex. 7**



Here is the EPA guidance letter I referred to a few days ago (attached). This letter is specific to transmission shift modes but there may be other letters for other selectable modes.

[http://iaspub.epa.gov/otaqpub/display\\_file.jsp?docid=20531&flag=1](http://iaspub.epa.gov/otaqpub/display_file.jsp?docid=20531&flag=1)

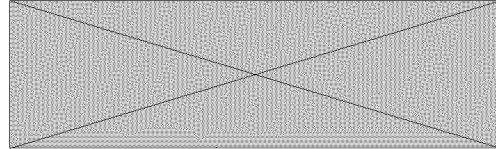
**Ex. 7**

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 2/25/2014 9:40:59 PM  
**Subject:** P.M. NEWSCAST: GM expands recall to 1.36 million vehicles, 13 deaths reported | Consumer Reports' top brand picks | Ford's next Sync partner?

[Click here to open this newsletter in a Web browser](#)

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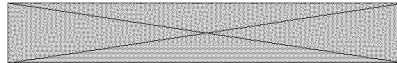
**February 25, 2014**



**[GM recall expanded »](#)**

**[Top picks in brands »](#)**

**[Ford's 'crown jewel'? »](#)**



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Automotive News is located at 1155 Gratiot Ave., Detroit, Michigan, 48207

..

**To:** james.tamm@dot.gov[james.tamm@dot.gov]  
**Cc:** Good, David[good.david@epa.gov]; Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]  
**From:** Wehrly, Linc  
**Sent:** Wed 2/26/2014 2:37:28 PM  
**Subject:** VW/Porsche CAFE

Jim,

Just a quick reminder – has your legal team made a determination yet as to whether the VW and Porsche CAFE data for 2012 needs to be together? This is one of the last remaining manufacturer issues that needs to be resolve for 2012 CAFE submission. Please let me know if you have heard anything.

Thanks,

Linc

Linc Wehrly

Director, Light-Duty Vehicle Center

Compliance Division

Office of Transportation and Air Quality

United States Environmental Protection Agency

(734) 214-4286

wehrly.linc@epa.gov

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Morning Transportation  
**Sent:** Wed 2/26/2014 3:02:11 PM  
**Subject:** POLITICO's Morning Transportation, presented by POWERJobs: Obama to unveil plan for \$302 billion transpo bill — Camp tax bill includes HTF money — Debbie eyeing a Dingell dynasty?

By Adam Snider

Featuring Kathryn A. Wolfe and Kevin Robillard

**BIG DAY FOR THE FUTURE OF THE HIGHWAY BILL:** With all the talk about the need for a funding solution, it seems the Democratic president and Republican House Ways and Means chairman are on the same page about one thing: Using corporate tax reform money for infrastructure. And they just so both happen to be unveiling major proposals today...

**OBAMA WANTS FOUR-YEAR, \$302 BILLION BILL:** President Barack Obama will lay out his goal for a \$302 billion, four-year surface transportation bill in a speech today at Union Depot in St. Paul., Minn. The White House has sought \$150 billion for infrastructure through corporate tax reform - but that's not the only way to raise money that's acceptable to the White House. "While the President will show how to fully pay for his proposal in this way, he will also make clear that he is open to ideas and wants to work with Congress in a bipartisan way to get this done," the administration said of today's speech. Obama will also announce \$600 million in TIGER funds, part of the recent omnibus spending bill, for which applications are due April 28. Kathryn has more: <http://politico.pro/1cPIEfg>

**Speaking of corporate tax reform...** House Ways & Means Chairman Dave Camp puts out his tax reform draft - and aides say it includes \$120-125 billion for the Highway Trust Fund. The tax package, which lowers the corporate rate from 35 to 25 percent, is likely doomed this year, but its inclusion of Highway Trust Fund money coupled with Obama's announcement today could move the ball forward in the funding discussion. \$125 billion would mean a lot for the fund - CBO figures show it would deal with the shortfall until around 2022. Kelsey Snell and your morning host have the story for Pros: <http://politico.pro/1o4Weyv>

**Of course that's not all:** There's more funding talk today, too. Senate EPW Chairwoman Barbara Boxer speaks at the AASHTO conference, and the audience will be all ears for any funding talk after her suggestion to move the gas tax upstream to the refinery level. Transportation Secretary Anthony Foxx's appearance at AASHTO got pushed from today to tomorrow morning because he'll be with the president for today's announcement. Former Secretary Ray LaHood goes on the Today Show to talk about "how America is one big pothole" and AAA puts out its state advocacy goals today, a list that includes transportation funding.

**WELL, IT'S WEDNESDAY.** Thanks for reading POLITICO's Morning Transportation, your daily tipsheet on trains, planes, automobiles and ports, where on this day in 1870 New York City's first-ever subway line powered by pneumatics opened. It was a block long. Please be in touch: [asnider@politico.com](mailto:asnider@politico.com) and on Twitter at @AdamKSnider.

"Driving along, you can see all the people..." <http://bit.ly/K8ptUo>

**GOING NEGATIVE NANCY:** House Transportation Chairman Bill Shuster is up with a new radio ad taking aim at GOP primary challenger Art Halvorson for negative campaigning. The minute-long spot hits Halvorson for relying on a Bloomberg article about Shuster's stance on the gas tax and a VMT fee that was later corrected. Halvorson has tried to tie Shuster to House Minority Leader Nancy Pelosi, something the ad dismisses. "The only Nancy in this race is Art Halvorson," one person tells another in the ad. "He's a Negative Nancy." Listen to the ad on YouTube: <http://bit.ly/1mxufsy>

**DINGELL DYNASTY?** Scott and Anna Palmer report: "The Dingell dynasty dates back to the era of FDR and there's very little that can stop it from rolling on. Rep. John Dingell announced Monday he's leaving the seat he took over from his father nearly six decades ago. And now his wife, Debbie Dingell, is planning to announce in the district Friday her candidacy for the open seat, according to a source close to Dingell. Dingell wasted no time putting together a campaign apparatus Monday, holding a conference call last night with her husband's former aides. She also may sever ties with the American Automotive Policy Council, where she has led the manufacturing arm of the Big Three-backed trade group, according to a source familiar with the situation. Debbie Dingell has a set of huge advantages over nearly any challenger for the Michigan seat: She will be able to tap into the powerful Dingell Machine, her husband's campaign coffers and a vast network of political operatives and donors." <http://politi.co/1k89IfE>

\*\*A message from POWERJobs: Jobs on our radar this week: Senior Communications Associate at HDMK, HR Business Partner at METRO and Business Intelligence Developer at SAIC. Interested? Apply to these jobs and more at [www.POWERJobs.com](http://www.POWERJobs.com); finally, a career site made for YOU!\*\*

**CRUDELY SPEAKING:** DOT is taking more steps to boost the safety of crude oil on trains. Just days after railroads agreed to some operational changes, the department announced an emergency order (<http://politico.pro/1ckGqSU>) that all companies shipping Bakken crude by rail appropriately test and classify the oil. DOT is also ensuring that crude from the Bakken region is classified as the more hazardous of three tiers. The American Fuel & Petrochemical Manufacturers said the order "leaves several questions unanswered."

**FOXX'S BUSY DAY:** Secretary Foxx had a busy few hours yesterday, delivering two speeches within about 90 minutes of each other. He started with a morning talk to the High-Speed Rail Summit, where he tried to push the conversation about fast trains beyond California's besieged project. "There's more to this conversation about high-speed rail than one or two projects around the country," Foxx said across the street from DOT. "You really see pockets of activity happening all over the country. And I really think that is one of the untold stories of high-speed rail." Both Texas and Florida are considering privately funded high-speed rail lines, Foxx noted, and he pointed to increasing speeds on some of Amtrak's Chicago routes.

**And then...** The secretary then rode a few miles northwest to the Capital Hilton, where 90 minutes later he had a clear message from aviation interests gathered for the Aero Club lunch: We haven't forgotten you. Foxx warned that the FAA is "still operating at historically low funding levels" even though much of the attention is on the beleaguered Highway Trust Fund

that pays for road, bridge and transit projects. "You've probably read in the paper that DOT is focused on a surface transportation bill," he said. "But that doesn't mean we have forgotten about funding for aviation. In fact, quite to the contrary."

**No comment:** Foxx also stayed out of the debate over banning in-flight cell phone calls, an issue DOT is currently collecting comments on. "We're in the midst of a comment period. So your comments are welcome," Foxx said to laughs when asked for his opinion. "I think it would be inappropriate for me to comment about how I feel about it. But for the record I turn my cell phone off."

**PUT A CORKER IN IT:** Sen. Bob Corker is worried the NLRB will tell him to, well, put a cork in it over the UAW's appeal of its recent lost unionization vote at a VW plant in Chattanooga, Tenn. Kevin has more: "The union's complaint centers on the actions of Corker and other Tennessee Republicans in the days leading up to the vote. Multiple state legislators threatened to withhold tax incentives from Volkswagen if the vote went the union's way, while Corker said a 'no' vote would guarantee Volkswagen would decide to build a new SUV at the Chattanooga plant." Read his full story: <http://politico.pro/1bJZRKa>

### **THE AUTOBAHN (SPEED READ)**

- FMCSA shuts down Atlanta-based bus company for multiple violations, including not drug testing drivers. <http://1.usa.gov/1hvwJ7q>
- Maryland drivers owe more in unpaid D.C. tickets (\$29 million in FY13) than D.C. residents (\$17 million). Washington Post: <http://wapo.st/1hclqCR>
- DOT fines Asiana Airlines \$500,000 for not properly aiding families after the fatal crash last year. <http://1.usa.gov/1cMDqC9>
- Tesla Model S among the cars winning a Top Pick award from Consumer Reports. The AP: <http://fxn.ws/1k88OzH>
- NTSB issues safety alerts about how proper maintenance and simulator training can improve helicopter safety for pilots. <http://1.usa.gov/1mwUvTN>
- GM has added nearly 600,000 vehicles to a recall for ignition switch repairs. Automotive News: <http://bit.ly/1kbPAWK>
- The National Air Transportation Association announces Bill Deere as its senior VP for government and external affairs.

**THE COUNTDOWN:** MAP-21 expires and DOT funding runs out in 217 days. FAA policy is up in 582 days. The mid-term elections are in 251 days and the 2016 presidential election is in 986 days. MLB's Opening Day is in 33 days.

**CABOOSE - Real punny:** FAA Administrator Michael Huerta must be a fan of puns - a Fast

Lane blog post about the agency's new website used a word that made even this pun-lover groan: "FAAcelift." Unfortunately, your host saw the blog post after he saw Huerta at the Aero Club - otherwise, the administrator would have been in for a grilling on his use of puns.

<http://1.usa.gov/1fDz2GO>

**\*\*A message from POWERJobs: Tap into the power of POWERJobs for the newest job opportunities in the Washington area from the area's top employers, including U.S. Chamber of Commerce, METRO and Deloitte. Powered by names you trust - POLITICO, WTOP, WJLA/ABC-TV, NewsChannel 8 and Federal News Radio- POWERJOBS is the ultimate career site with more than 2 million job searches and nearly 17,000 applications submitted this year so far. Connect through Facebook or LinkedIn, search jobs by industry and set up job-specific email alerts using [www.POWERJobs.com](http://www.POWERJobs.com), the site for Washington's top talent.\*\***

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=====.



**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Wed 2/26/2014 5:43:43 PM  
**Subject:** RE: please call  
VGA2015 FEGuide-all rel dates-no-sales-2-26-2014.xlsx

Richard,

Here you go,

[I had macro problems yesterday.]

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Wednesday, February 26, 2014 10:12 AM  
**To:** Good, David  
**Subject:** please call  
**Importance:** High

Hi Dave;

I had to make changes to 2015 VGA index 007 and 006 and the annual fuel cost and 5 year savings values. If you ran that report yesterday could you see that the label audit is run again today to pick up these changes.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road

Auburn Hills, MI 48326

Engineering and Environmental Office (EEO)

Phone: 248 754-4213

Fax: 248 754-4207

[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

EPA com	VERIFY cc	Model Yr	(Mfr Name	Division (1	Carline	Verify Mfr	Index (Mo	Eng Displ	# Cyl
		2015	Volkswagen	Group of A3	VGA		7	1.8	4
		2015	Volkswagen	Group of A3 Cabriolet	VGA		6	1.8	4
		2015	Volkswagen	Group of A3 Cabriolet quattro	VGA		5	2.0	4
		2015	Volkswagen	Group of A3 quattro	VGA		4	2.0	4
		2015	Volkswagen	Group of A8	VGA		11	4.0	8
		2015	Volkswagen	Group of A8L	VGA		10	4.0	8
		2015	Volkswagen	Group of S8	VGA		9	4.0	8
		2015	Volkswagen	Group of TT Coupe quattro	VGA		2	2.0	4
		2015	Volkswagen	Group of TT Roadster quattro	VGA		3	2.0	4
		2015	Volkswagen	Volkswagen GTI	VGA		1	2.0	4
		2015	Volkswagen	Volkswagen GTI	VGA		8	2.0	4

Trans as I	City FE (G	Hwy FE (C	Comb FE	Low'd City	Low'd HW	Low'd Cor	City Unad	Hwy Unad	Comb Unad
Auto(AM-S6)	23	33	27				28.9000	46.6000	34.8580
Auto(AM-S6)	24	35	28				30.5000	47.0000	36.2224
Auto(AM-S6)	23	32	26				29.0000	44.2000	34.3094
Auto(AM-S6)	24	33	27				30.0000	44.6000	35.1828
Auto(S8)	18	30	22				22.5929	39.4000	27.9601
Auto(S8)	18	29	22				22.2780	39.1000	27.6266
Auto(S8)	17	27	20				19.9000	36.4000	24.9995
Auto(AM-S6)	22	31	26				28.3669	42.1911	33.2728
Auto(AM-S6)	22	31	26				28.3669	42.1911	33.2728
Auto(AM-S6)	25	33	28				30.7000	45.3000	35.9078
Manual(M6)	25	34	28				30.0000	46.4000	35.6740

City	Highway	City	Highway	Unrd Comb Unr	Guzzler?	Air Aspir	I Air Aspir	A Trans	Trans Des	Trans, Otr	# Gears
23.4556	33.3421	27.0673				TC	Turbocharged	AVS	Automated Manual- Selectable	(e.g. Au	
24.3444	34.5845	28.0867				TC	Turbocharged	AVS	Automated Manual- Selectable	(e.g. Au	
23.3120	31.5429	26.4136				TC	Turbocharged	AVS	Automated Manual- Selectable	(e.g. Au	
24.0818	32.6198	27.2970				TC	Turbocharged	AVS	Automated Manual- Selectable	(e.g. Au	
18.2315	29.5343	22.0244				TC	Turbocharged	SA	Semi-Automatic		8
17.9485	28.5015	21.5369				TC	Turbocharged	SA	Semi-Automatic		8
16.5369	26.7008	19.9551				TC	Turbocharged	SA	Semi-Automatic		8
22.3665	31.1759	25.6242				TC	Turbocharged	AVS	Automated Manual- Selectable	(e.g. Au	
22.3665	31.1759	25.6242				TC	Turbocharged	AVS	Automated Manual- Selectable	(e.g. Au	
24.6434	32.6158	27.6891				TC	Turbocharged	AVS	Automated Manual- Selectable	(e.g. Au	
24.9095	34.2917	28.4070				TC	Turbocharged	SA	Manual		6

Lockup Tc	Trans Cre	Drive Sys	Drive Des	Primary B	Max Ethar	Max Biodi	Range1 - I	Fuel Usag	Fuel Usag
Yomated	Manual with	Apaddles)	2-Wheel Dr	FIVEAV02.0	APA	15	GP	Gasoline (Premium	
Yomated	Manual with	Apaddles)	2-Wheel Dr	FIVEAV02.0	APA	15	GP	Gasoline (Premium	
Yomated	Manual with	Apaddles)	All Wheel Dr	FIVEAV02.0	APA	15	GP	Gasoline (Premium	
Yomated	Manual with	Apaddles)	All Wheel Dr	FIVEAV02.0	APA	15	GP	Gasoline (Premium	
Y	N	A	All Wheel Dr	FIVEAV04.0	NUA	15	GP	Gasoline (Premium	
Y	N	A	All Wheel Dr	FIVEAV04.0	NUA	15	GP	Gasoline (Premium	
Y	N	A	All Wheel Dr	FIVEAV04.0	NUA	15	GP	Gasoline (Premium	
Yomated	Manual with	Apaddles)	All Wheel Dr	FIVEAV02.0	AUA	15	GP	Gasoline (Premium	
Yomated	Manual with	Apaddles)	All Wheel Dr	FIVEAV02.0	AUA	15	GP	Gasoline (Premium	
Yomated	Manual with	Apaddles)	2-Wheel Dr	FIVEAV02.0	APA	15	GP	Gasoline (Premium	
N	N	F	2-Wheel Dr	FIVEAV02.0	APA	15	GP	Gasoline (Premium	

2017-FFP Unit	2017-FFP Unit	Gas Guzzl	Gas Guzzl	2Dr Pass	2Dr Lugg	4Dr Pass	4Dr Lugg	Htchbk Pa	Htchbk Lu
MRC	Leaded Release	regulated	Not exempt			86	12		
MRC	Leaded Release	regulated	Not exempt	79	10				
MRC	Leaded Release	regulated	Not exempt	79	10				
MRC	Leaded Release	regulated	Not exempt			86	10		
MRC	Leaded Release	regulated	Not exempt			100	15		
MRC	Leaded Release	regulated	Not exempt			107	15		
MRC	Leaded Release	regulated	Not exempt			100	15		
MRC	Leaded Release	regulated	Not exempt	74	13				
MRC	Leaded Release	regulated	Not exempt						
MRC	Leaded Release	regulated	Not exempt					93	14
MRC	Leaded Release	regulated	Not exempt					93	14

Annual Fuel	EPA Calculated	Comment	City2 FE (Hwy2 Fuel Comb2 Fuel	Low'd City	Low'd Hw	Low'd Cor	City2 Unadjusted
2100		2100 corrected fuel unit price					
2050		2050 refresh release date, corrected interior volumes, fuel unit price correction					
2200		2200 refreshed release date, interior volume corrected					
2100		2100 carline interior volumes corrected from 2 door to 4 door					
2600		2600					
2600		2600 FUEL AND GHG RATING CORRECTED TO 5					
2850		2850 S/S indicator to yes, back to NO.					
2200		2200					
2200		2200					
2050		2050 SMOG corrected to 9 as this is a nationwide Tier 2 BIN 2 and Calif PZEV					
2050		2050					



Model Year Fuel Type (VW Fuel Type) Alternative Fuel  
Hwy2 City2 Comb2 Unit2 City2 Unit2 Hwy2 Unit2 Comb2 Unit2 Range2 - Fuel2 Use2 Fuel2 Use2 Fuel2 Unit2 Fuel2 Unit2

2017-FFP\_009153

Car/Truck	Calc Appr Sales	Release DEPA FE Label Dataset	Unique La	Label Rec	Relabel	Relabel D
car	Vehicle Specific 5-cycle	2/25/2014	15406	N	N	
car	Vehicle Specific 5-cycle	6/1/2014	15407	N	N	
car	Vehicle Specific 5-cycle	6/1/2014	15317	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15320	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15385	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15386	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15400	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15302	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15303	N	N	
car	Vehicle Specific 5-cycle	4/1/2014	15293	N	N	
car	Vehicle Specific 5-cycle	4/1/2014	15313	N	N	

Suppress	Police/Em	Comment	Cyl Deact	Cyl Deact	Var Valve	Var Valve	Var Valve	Var Valve	Energy St
N	N	1.8L Engine	Code CNSB		Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	1.8L Engine	Code CNSB		Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	2.0L Engine	Code CNTC		Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	2.0L Engine	Code CNTC		Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	Engine Code CTGA. A8	Deactivation	Start	Stop	Continuously	Hyd	Stk	Yes
N	N	Engine Code CTGA. A8	Deactivation	Start	Stop	Continuously	Hyd	Stk	Yes
N	N	Engine Code CYCA. 68	Deactivation	Start	Stop	Continuously	Hyd	Stk	Yes
N	N	Generation NL (EVO) 2.0L TFSI. ENGINE CODE	Continuous			VARIABLE	VALVE TIMING		
N	N	Generation NL (EVO) 2.0L TFSI. ENGINE CODE	Continuous			VARIABLE	VALVE TIMING		
N	N	2.0L Engine	Code CNTA		Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	2.0L Engine	Code CNTA		Y	CONTINUOUS	VARIABLE	VALVE TIMING	

Device Desc	Battery #	Battery Ty	Battery Ty	Total Volt	Batt Ener	Batt Spec	Batt Char	Comment	# Capacit
-------------	-----------	------------	------------	------------	-----------	-----------	-----------	---------	-----------

alVSe d i a s t a b r e l l o b e f l i z e r i o ( l a b v a l v e s a b d e s i g n e d ) d i t b f u s e c o n j e c t i o n l a b e r i d t i g n i z i o n f o r e a d t i n d i c a t o r e a c t i v a t i o n s a b d e s c r i b									
alVSe d i a s t a b r e l l o b e f l i z e r i o ( l a b v a l v e s a b d e s i g n e d ) d i t b f u s e c o n j e c t i o n l a b e r i d t i g n i z i o n f o r e a d t i n d i c a t o r e a c t i v a t i o n s a b d e s c r i b									
alVSe d i a s t a b r e l l o b e f l i z e r i o ( l a b v a l v e s a b d e s i g n e d ) d i t b f u s e c o n j e c t i o n l a b e r i d t i g n i z i o n f o r e a d t i n d i c a t o r e a c t i v a t i o n s a b d e s c r i b									

second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km
second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km
second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

Motor	Ger	Rated Mot	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Cell V	Off Board	Camless V	Oil Viscosi
					GDI	Spark Ignition Direct Injection	N			5W40 VW 50200
					GDI	Spark Ignition Direct Injection	N			5W40 VW 50200
					GDI	Spark Ignition Direct Injection	N			5W40 VW 50200
					GDI	Spark Ignition Direct Injection	N			5W40 VW 50200
h					GDI	Spark Ignition Direct Injection	N			5W30 VW 50400 /
h					GDI	Spark Ignition Direct Injection	N			5W30 VW 50400 /
h					GDI	Spark Ignition Direct Injection	N			5W30 VW 50400 /
					GDI	Spark Ignition Direct Injection	N			5W40
					GDI	Spark Ignition Direct Injection	N			5W40
					GDI	Spark Ignition Direct Injection	N			5W40 VW 50200
					GDI	Spark Ignition Direct Injection	N			5W40 VW 50200

Stop/Start	Stop/Start	Trans in FE	Trans as I	Model Typ	Charge De	Charge De	Charge Su	Charge Su	EPA Calcul
N	No	Auto(AM-S6)	Auto(AM-S6)						
N	No	Auto(AM-S6)	Auto(AM-S6)						
N	No	Auto(AM-S6)	Auto(AM-S6)						
N	No	Auto(AM-S6)	Auto(AM-S6)						
Y0700	Yes	Auto(S8)	Auto(S8)						
Y0700	Yes	Auto(S8)	Auto(S8)						
Y0700	No	Auto(S8)	Auto(S8)						
N	No	Auto(AM-S6)	Auto(AM-S6)	T Coupe quattro					
N	No	Auto(AM-S6)	Auto(AM-S6)	T Coupe quattro					
N	No	Auto(AM-S6)	Auto(AM-S6)						
N	No	Manual(M6)	Manual(M6)						



Model Year	CO2 (g/kWh)	EPA Calculated Gas GZR	EPA Rating	GHG Rating	#1 Smog R	#1 Mfr Sm	#1 EPA Sm	SmartWay
	34.9		7	7 FVGAV02.0APA	9			
	36.2		7	7 FVGAV02.0APA	9			
	34.3		6	6 FVGAV02.0APA	9			
	35.2		7	7 FVGAV02.0APA	9			
	28.0		5	5 FVGAV04.0NUA	5			
	27.6		5	5 FVGAV04.0NUA	5			
	25.0		5	5 FVGAV04.0NUA	5			
	33.3		6	6 FVGAV02.0AUA	5			
	33.3		6	6 FVGAV02.0AUA	5			
	35.9		7	7 FVGAV02.0APA	9			
	35.8		7	7 FVGAV02.0APA	9			

Signal 10 Pull #56 Test #6 for Test Group A) #3 Smog R #3 Mfr Sm #3 EPA Sm SmartWay #4 Smog R #4 Mfr Sm

Highway Miles Per Gallon (City/Highway/Combined)	Highway Miles Per Gallon (City/Highway/Combined)	Highway Miles Per Gallon (City/Highway/Combined)	Highway Miles Per Gallon (City/Highway/Combined)	Highway Miles Per Gallon (City/Highway/Combined)
500	379	267	328	
750	362	256	314	
0	379	280	334	
500	366	271	323	
	2000	484	299	401
	2000	492	310	410
	3250	534	331	442
0	395	284	345	
0	395	284	345	
750	358	271	319	
750	355	258	311	



City	State	Distance (miles)	Comb Vol Higher	Final Label	EPA_FUEL	EPA_GHG	EPA_AMT
N		3.7		3.7			
N		3.6		3.6			
N		3.8		3.8			
N		3.7		3.7			
N		4.5		4.5			
N		4.5		4.5			
N		5.0		5.0			
N		3.8		3.8			
N		3.8		3.8			
N		3.6		3.6			
N		3.6		3.6			



**EPA\_UNR EPA\_UNR EPA\_UNR EPA\_ADJ\_EPA\_PHEVLabel SubrGHG 1-10 rating on Ethanol (EPA Deter**

Mr Richard E Thomas Jr  
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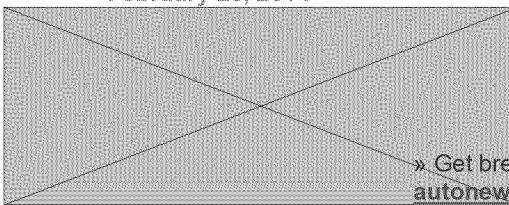


**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Wed 2/26/2014 9:26:34 PM  
**Subject:** DAILY: Panasonic eyes investment in Tesla gigafactory | GM moves to enhance supplier ties | Honda ends Insight hybrid output | Toyota design chief to head Lexus

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12:29 pm U.S. ET | Feb 26

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UPDATED: 2/26/14 9:05 am ET -- Correction  
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UPDATED: 2/26/14 3:19 pm ET - corrected

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» GM expands ignition switch recall by more than 588,000 vehicles

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4:02 pm U.S. ET | Feb 25

February auto sales forecast cut to 15.5 million pace, LMC says

3:49 pm U.S. ET | Feb 26

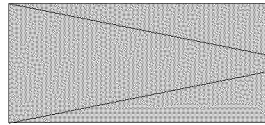
Ford wants to expand credit lines to \$12 billion, report says

2:04 pm U.S. ET | Feb 26

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11:49 am U.S. ET | Feb 26

Cooper-Standard said to be considering merger with TI Automotive



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Marketing by DMEautomotive

» 3/04 - Social & Digital Strategy by IBM

» 3/20 - Is your website engaging? by Dataium

» March 21, 2014 - Nominate Your Best Dealerships

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» June 3, 2014 - Rising Stars

» June 4, 2014 - ANE Congress

» Sept. 18 - NY Marketing Seminar

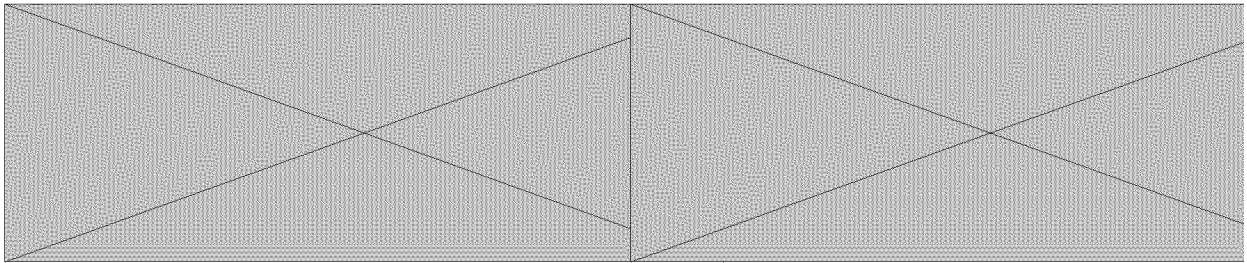
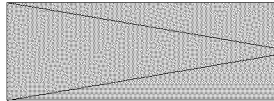
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**To:** Kaul, Meetu[Kaul.Meetu@epa.gov]  
**Cc:** Klepp, Robert[Klepp.Robert@epa.gov]  
**From:** Miller, Anthony  
**Sent:** Thur 2/27/2014 4:42:21 PM  
**Subject:** FW: Training follow-up

Hey Meetu,

**Ex. 5, 7**

Tony Miller  
Chemical Engineer  
OECA/AED/Western Field Office (8MSU)  
1595 Wynkoop Street, Rm 2222  
Denver, Colorado 80202

Tel: 303-312-7161

Fax: 303-312-6003

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**From:** Klepp, Robert  
**Sent:** Wednesday, February 26, 2014 4:44 PM  
**To:** Miller, Anthony; Wick, Anne; Isin, Amelie  
**Subject:** Training follow-up

**Ex. 5, 7**

Thanks.

Bob

Robert G. Klepp, Acting Chief

Mobile Source Enforcement Branch

Air Enforcement Division

U.S. Environmental Protection Agency

1200 Pennsylvania Avenue, NW

Washington, DC 20460

(202) 564-5805

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Allen, Gregory[Gregory.Allen@vw.com]; Giles, Michael (EEO)[michael.giles@vw.com]  
**From:** Rodgers, William (EEO)  
**Sent:** Thur 2/27/2014 6:18:40 PM  
**Subject:** Decision information

Hello Jim,

I wanted to let you know that I submitted two decision information files yesterday regarding the 2015 Lamborghini Gallardo replacement called the Huracan and Huracan Spyder. Please let us know if you plan to confirm these models.

Thanks,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

william.rodgers@vw.com

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Anthony Creta  
**Sent:** Thur 2/27/2014 8:01:32 PM  
**Subject:** Conversations about 2014 Nissan SL 2.5 Poor Mileage

Environmental Protection Agency

1200 Pennsylvania Avenue, N.W.

Washington D.C, District of Columbia 20460

Mr. Lincoln Wehrly - Director of Light-Duty Vehicle Center Compliance  
Division At the Ann Arbor Laboratory

Dear Mr. Wehrly,

Hello! I'll make this short because I now know from our conversation today how over burden the EPA really is!

Thank you for the continued conversation/emails I have been having with the [www.Fueleconomy.gov](http://www.Fueleconomy.gov) and its engineers!

The 2013 Volkswagen Jetta Hybrid thanks to Dave is now back at Volkswagen where it belongs!

Now the 2014 Nissan Altima SL 2.5 mileage problem/s with main concern mileage problem working with Jim has been helpful too!

I hope the new regulations with Dave Good and now you will go in to effect immediately because its devouring the Middle Class and Poor in our great



country the United States of America!

After many conversations on the phone and emails with Dave Good and Jim Snyder I learned a lot about what you people do at the EPA!

It seems very interesting to me the work you people do every day!

I hope you will continue to improve the much needed way your testing of these vehicles along with the manufacturers that do their own!

This way so that us Americans can go out and buy a vehicle knowing the EPA did everything in its power to give us an EPA mileage sticker without getting disappointed when we drive it and go to the gas pump to fill it up!

I want to thank you for your time and you will be hearing again from me shortly!

Sincerely,

Anthony Creta

**Ex. 6**

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Snyder, Jim  
**Sent:** Thur 2/27/2014 9:48:07 PM  
**Subject:** RE: Decision information

I waived them but I still want to test the 3.0L with dual injection.

FYI, I will be out of the office next week from this Friday to next Thursday.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Rodgers, William (EEO) [mailto:William.Rodgers@vw.com]  
**Sent:** Thursday, February 27, 2014 1:19 PM  
**To:** Snyder, Jim  
**Cc:** Allen, Gregory; Giles, Michael (EEO)  
**Subject:** Decision information

Hello Jim,

I wanted to let you know that I submitted two decision information files yesterday regarding the 2015 Lamborghini Gallardo replacement called the Huracan and Huracan Spyder. Please let us know if you plan to confirm these models.

Thanks,

Bill Rodgers

Emissions Certification Engineer

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Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**To:** Brooks, Phillip[Brooks.Phillip@epa.gov]  
**From:** Charlotte Linfoot  
**Sent:** Fri 2/28/2014 10:29:34 AM  
**Subject:** Who will be at World Bio Markets 2014?

Dear Phillip,

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We look forward to seeing you in Amsterdam.

Kind regards,

Dr Charlotte Linfoot  
World Bio Markets Series Director  
T: +44 (0)20 3384 6218  
E: [charlotte.linfoot@greenpowerconferences.com](mailto:charlotte.linfoot@greenpowerconferences.com)

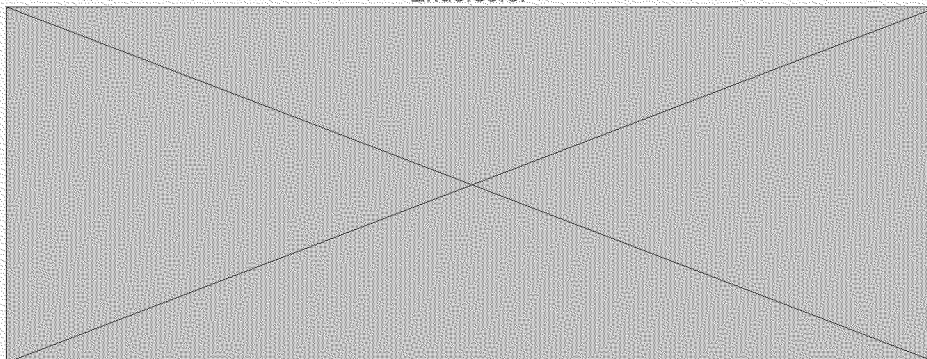
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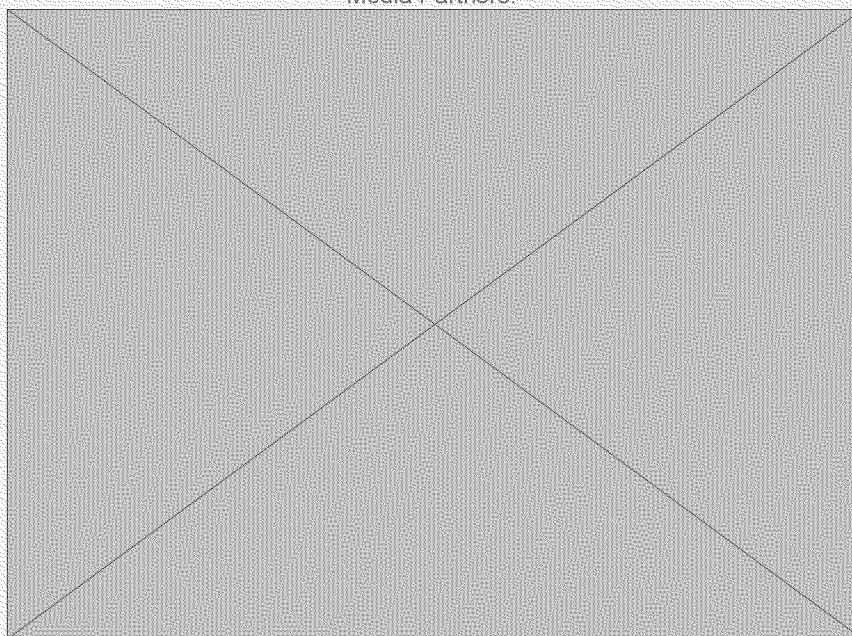
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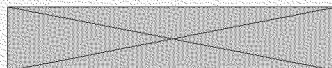


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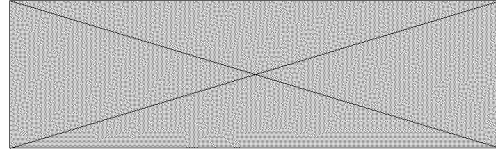
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ack Prince Road, London SE1

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Fri 2/28/2014 7:36:23 PM  
**Subject:** P.M. NEWSCAST: Device may aid car hackers | Senator seeks answers | VW, Lexus, Nissan plan Geneva debuts

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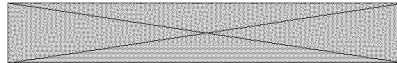
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..



**To:** Snyder, Jim[Snyder.Jim@epa.gov]; Wright, DavidA[Wright.DavidA@epa.gov]  
**Cc:** Allen, Gregory[Gregory.Allen@vw.com]; Giles, Michael (EEO)[michael.giles@vw.com]  
**From:** Rodgers, William (EEO)  
**Sent:** Fri 2/28/2014 8:41:39 PM  
**Subject:** VW Group Decision Information for Audi A8 3.0l

Hello David,

In Jim Snyder's absence, most of next week, can you please arrange a confirmatory test date of Monday April 7<sup>th</sup> for the following vehicle. We recently completed the submission of test data and related decision information into Verify. It is our understanding that Jim wants to confirm the FTP, HWY and US06 cycles for this vehicle.

Model Year = 2015

Manufacturer Code = VGA

**Ex. 4 - CBI** (Audi A8 with 3.0l gasoline engine)

Configuration # = 0

Given the tight product launch timing for this model, it would be greatly appreciated you could confirm this test date as soon as possible to avoid vehicle shipping delays from Germany.

Please contact me if you have any questions or concerns.

Regards,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**To:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Allen, Gregory[Gregory.Allen@vw.com]; Giles, Michael (EEO)[michael.giles@vw.com]  
**From:** Wright, DavidA  
**Sent:** Fri 2/28/2014 9:25:11 PM  
**Subject:** RE: VW Group Decision Information for Audi A8 3.0l

I have requested this vehicle be confirmatory tested and VW should be receiving a notification from Verify shortly. The vehicle will be scheduled for testing once the supplemental information has been submitted. I will be in the office all next week, please do not hesitate to contact me if you need any further assistance.

Regards,

David

David A. Wright

Light-Duty Vehicle Center, Compliance Division

National Vehicle and Fuel Emissions Laboratory

Phone: (734) 214-4467

E-mail: wright.davida@epa.gov

**From:** Rodgers, William (EEO) [mailto:William.Rodgers@vw.com]  
**Sent:** Friday, February 28, 2014 3:42 PM  
**To:** Snyder, Jim; Wright, DavidA  
**Cc:** Allen, Gregory; Giles, Michael (EEO)  
**Subject:** VW Group Decision Information for Audi A8 3.0l

Hello David,

In Jim Snyder's absence, most of next week, can you please arrange a confirmatory test date of Monday April 7<sup>th</sup> for the following vehicle. We recently completed the submission of test data and related decision information into Verify. It is our understanding that Jim wants to confirm the FTP, HWY and US06 cycles for this vehicle.

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Configuration # = 0

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Regards,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)



To: Alex Keros (alexander.keros@gm.com)[alexander.keros@gm.com]; **Ex. 7**  
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(angela.das@powertechlabs.com)[angela.das@powertechlabs.com]; Bill MacLeod (bmacleod@hyundai-dc.com)[bmacleod@hyundai-dc.com]; Bob Oesterreich  
(bob.oesterreich@airliquide.com)[bob.oesterreich@airliquide.com]; Bradley Field  
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(fred.joseck@ee.doe.gov)[fred.joseck@ee.doe.gov]; **Ex. 7**  
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Rafael[RGuevara2@semprautilities.com]; Jacquelyn Birdsall  
(jacquelyn.birdsall@tema.toyota.com)[jacquelyn.birdsall@tema.toyota.com]; Jared Farnsworth  
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(Jay.Keller@ZCES-Inc.com)[Jay.Keller@ZCES-Inc.com]; Jean Baronas  
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Cooper[jcooper@e4strategicsolutions.com]; Jerome Gregeois  
(jgregeois@hatci.com)[jgregeois@hatci.com]; Jim McKinney  
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Joseph Pratt (jwpratt@sandia.gov)[jwpratt@sandia.gov]; Justin Ward  
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(KZeng@semprautilities.com)[KZeng@semprautilities.com]; Keith Wipke  
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Leslie Eudy (leslie\_eudy@nrel.gov)[leslie\_eudy@nrel.gov]; Lisa Fasano  
(lfasano@baaqmd.gov)[lfasano@baaqmd.gov]; Lisa Mirisola (lmirisola@aqmd.gov)[lmirisola@aqmd.gov];  
Lora Renz (lora.renz@daimler.com)[lora.renz@daimler.com]; Marc W. Melaina Ph. D.  
(marc\_melaina@nrel.gov)[marc\_melaina@nrel.gov]; Mark Guin (mguin@hatci.com)[mguin@hatci.com];  
Mark Saxonberg (mark\_saxonberg@toyota.com)[mark\_saxonberg@toyota.com]; Mark Schiller  
(mschiller@protononsite.com)[mschiller@protononsite.com]; Matt McClory  
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mmiyasato@aqmd.gov[mmiyasato@aqmd.gov]; Matthew Forrest  
(matthew.forrest@daimler.com)[matthew.forrest@daimler.com]; Michael Beckman  
(michael.beckman@linde.com)[michael.beckman@linde.com]; **Ex. 7**  
**Ex. 7** Michael Johnston  
(michael.johnston@gm.com)[michael.johnston@gm.com]; Michel Archambault  
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Sullivan (pmsulli@sandia.gov)[pmsulli@sandia.gov]; Polo Del Toro  
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r.modlin@chrysler.com[r.modlin@chrysler.com]; Remy garderet  
(remy.garderet@einow.org)[remy.garderet@einow.org]; Rex Sanders

(rsanders@baaqmd.gov)[rsanders@baaqmd.gov]; Richard Farmer (richard.farmer@ee.doe.gov)[richard.farmer@ee.doe.gov]; Robert Bienenfeld (Robert\_Bienenfeld@ahm.honda.com)[Robert\_Bienenfeld@ahm.honda.com]; Ron Nies(ron.nies@cdfa.ca.gov); Sam Sprik (Sam\_Sprik@nrel.gov)[Sam\_Sprik@nrel.gov]; Sarah Williams (sarah.k.williams@energy.ca.gov)[sarah.k.williams@energy.ca.gov]; Scott Samuelsen[gss@uci.edu]; Shane Stephens-Romero (ssr@aep.uci.edu)[ssr@aep.uci.edu]; stephen\_ellis@ahm.honda.com[stephen\_ellis@ahm.honda.com]; Steve Hoffman (hoffmasw@airproducts.com)[hoffmasw@airproducts.com]; Steve Mathison (smathison@hra.com)[smathison@hra.com]; Tammy Sulli (TSulli@cdfa.ca.gov)[TSulli@cdfa.ca.gov]; Tim Lipman[teipman@berkeley.edu]; Tyson Eckerle (tyson@einow.org)[tyson@einow.org]; Will James (Charles.James@EE.Doe.Gov)[Charles.James@EE.Doe.Gov]; Aaron Harris (Aaron.Harris@airliquide.com)[Aaron.Harris@airliquide.com]; Abraham Vinita (vinita.abraham@linde.com)[vinita.abraham@linde.com]; angie\_nucci@ahm.honda.com[angie\_nucci@ahm.honda.com]; Ann Ellis (AEllis@semprautilities.com)[AEllis@semprautilities.com]; Annabel Cook (Annabel\_cook@ahm.honda.com)[Annabel\_cook@ahm.honda.com]; Art George (georgeaf@apci.com)[georgeaf@apci.com]; Brian Bonner (BONNERBB@airproducts.com)[BONNERBB@airproducts.com]; Brian Johnston (johnstb@ntona.nissan-usa.com)[johnstb@ntona.nissan-usa.com]; Carl Rivkin (Carl.Rivkin@nrel.gov)[Carl.Rivkin@nrel.gov]; Chad Blake (Chad.Blake@nrel.gov)[Chad.Blake@nrel.gov]; Cherif Youssef (cyoussef@semprautilities.com)[cyoussef@semprautilities.com]; Dan Raudebaugh[dan@cte.tv]; Daniel Dedrick (dededri@sandia.gov)[dededri@sandia.gov]; Danny Terlip (Danny.Terlip@nrel.gov)[Danny.Terlip@nrel.gov]; Dave Dewitt (ddewitt@hra.com)[ddewitt@hra.com]; edward\_cohen@hna.honda.com[edward\_cohen@ahm.honda.com]; Erik Bigelow (erik@cte.tv)[erik@cte.tv]; Gilbert Castillo (gcastillo@hmausa.com)[gcastillo@hmausa.com]; Guy McAree (guy.mcaree@ballard.com)[guy.mcaree@ballard.com]; Holly Langbein (Holly@politicalsolutions.us)[Holly@politicalsolutions.us]; Jackie Blackmore (jackie.blackmore@ketchum.com)[jackie.blackmore@ketchum.com]; Jaimie Levin (Jaimie@CTE.tv)[Jaimie@CTE.tv]; Jason Hanlin (jason@cte.tv)[jason@cte.tv]; Jean Grigg (jmg@aep.uci.edu)[jmg@aep.uci.edu]; Jeff Swedlund (jeff\_swedlund@ahm.honda.com)[jeff\_swedlund@ahm.honda.com]; Jennifer Kurta (Jennifer.Kurtz@nrel.gov)[Jennifer.Kurtz@nrel.gov]; Jessica Fini (jessica\_fini@ahm.honda.com)[jessica\_fini@ahm.honda.com]; Joe Wong (Joe.Wong@powertechlabs.com)[Joe.Wong@powertechlabs.com]; MIKULIN, JOHN[MIKULIN.JOHN@EPA.GOV]; Jonah Margolis (jmargoli@energy.state.ca.us)[jmargoli@energy.state.ca.us]; Kaori Alarid (kaori.alarid@tema.toyota.com)[kaori.alarid@tema.toyota.com]; Karen Schkolnick (kschkolnick@baaqmd.gov)[kschkolnick@baaqmd.gov]; Kevin Lee (kslee@hatci.com)[kslee@hatci.com]; Kristen Nawoj (kristen.nawoj@ee.doe.gov)[kristen.nawoj@ee.doe.gov]; Larry Whuk Phd (lwnuk@calstart.org)[lwnuk@calstart.org];

**Ex. 7**

**Ex. 7**

Lourdes C Martinez

(lcmartinez@aqmd.gov)[lcmartinez@aqmd.gov]; Luise Turner (Luise.Turner@powertechlabs.com)[Luise.Turner@powertechlabs.com]; Mary Kathryn Campbell (mkcampbell@calstart.org)[mkcampbell@calstart.org]; Melanie Caton (Melanie.Caton@nrel.gov)[Melanie.Caton@nrel.gov];

**Ex. 7**

**Ex. 7**

Michael Dray

(Michael.Dray@calstatela.edu)[Michael.Dray@calstatela.edu]; Michael Neward (mneward@baaqmd.gov)[mneward@baaqmd.gov]; Michael Penev (michael\_penev@nrel.gov)[michael\_penev@nrel.gov]; Michael Strapazon (mstrapazon@webershandwick.com)[mstrapazon@webershandwick.com]; Mike Lord (Michael.lord@tema.toyota.com)[Michael.lord@tema.toyota.com]; Mike Schweizer (schweizerm@mbusa.com)[schweizerm@mbusa.com]; monique.dunn@ballard.com[monique.dunn@ballard.com]; Nitin Natesan (Nitin.Natesan@linde.com)[Nitin.Natesan@linde.com]; Peter Gavigan (peter.gavigan@linde.com)[peter.gavigan@linde.com]; Robert Burgess

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**Ex. 7** Chris White[cwhite@CAFCEP.org]; Elan Shore[eshore@CAFCEP.org]; Jennifer Hamilton[JHamilton@cafcp.org]; Joe Gagliano[JGagliano@CAFCEP.org]; Juan Contreras[JContreras@CAFCEP.org]; Keith Malone[kmalone@CAFCEP.org]; Linda Carrizosa[lcarrizosa@cafcp.org]; Lun So[lso@CAFCEP.org]; Nico Bouwkamp[nbouwkamp@cafcp.org]  
**From:** Linda Carrizosa  
**Sent:** Sat 3/1/2014 12:46:24 AM  
**Subject:** March WG Meeting agenda now available and RSVP request

Hello Working Group Members,

The agenda and meeting information is now available on MR and can be found here:  
-----<http://cafcpmembers.org/membersonly/node/3591>.

#### **RSVP Requested:**

Also on our MR, we are implementing a new system for collecting an accurate headcount to our meetings for planning purposes. Please RSVP for the Working Group Meeting by Friday, **March 7<sup>th</sup>** or sooner, by clicking here:  
[http://cafcpmembers.org/membersonly/wg\\_rsvp\\_march2014](http://cafcpmembers.org/membersonly/wg_rsvp_march2014).

I know that some of you have already given me your attendance status, but it would be greatly appreciated if you could go to the RSVP link provided above and answer a few simple questions. We will be using these results to determine our needs for catering and meeting logistics.

If you need assistance, please do not hesitate to contact me (see contact info below) or Ben Xiong at [bxiong@cafcp.org](mailto:bxiong@cafcp.org). He can also be reached at (916)371-28570.

Please let me know if you have any questions.



Thank you,

**Linda Carrizosa** | Administrative Assistant | CaFCP

D 916 371 2870 | F 916 375 8005 | [lcarrizosa@cafcp.org](mailto:lcarrizosa@cafcp.org)

3300 Industrial Blvd., Ste. 1000, West Sacramento, CA 95691 | [www.cafcp.com](http://www.cafcp.com)

**To:** Kaul, Meetu[Kaul.Meetu@epa.gov]  
**From:** adair.jocelyn@epa.gov  
**Sent:** Sat 3/1/2014 5:01:02 AM  
**Subject:** Reminder: You are under an obligation to preserve information (Litigation Hold)

**Ex. 5, 7**

**Ex. 5, 7**

**Ex. 5, 7**

**To:** Wright, DavidA[Wright.DavidA@epa.gov]; Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Allen, Gregory[Gregory.Allen@vw.com]; Giles, Michael (EEO)[michael.giles@vw.com]  
**From:** Rodgers, William (EEO)  
**Sent:** Mon 3/3/2014 2:18:32 PM  
**Subject:** RE: VW Group Decision Information for Audi A8 3.0l

David,

The Supplemental Information has been submitted. Thanks.

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

william.rodgers@vw.com

**From:** Wright, DavidA [mailto:Wright.DavidA@epa.gov]  
**Sent:** Friday, February 28, 2014 4:25 PM  
**To:** Rodgers, William (EEO); Snyder, Jim  
**Cc:** Allen, Gregory; Giles, Michael (EEO)  
**Subject:** RE: VW Group Decision Information for Audi A8 3.0l

I have requested this vehicle be confirmatory tested and VW should be receiving a notification from Verify shortly. The vehicle will be scheduled for testing once the supplemental information has been submitted. I will be in the office all next week, please do not hesitate to contact me if you need any further assistance.

Regards,

David

David A. Wright

Light-Duty Vehicle Center, Compliance Division

National Vehicle and Fuel Emissions Laboratory

Phone: (734) 214-4467

E-mail: [wright.davida@epa.gov](mailto:wright.davida@epa.gov)

**From:** Rodgers, William (EEO) [<mailto:William.Rodgers@vw.com>]

**Sent:** Friday, February 28, 2014 3:42 PM

**To:** Snyder, Jim; Wright, DavidA

**Cc:** Allen, Gregory; Giles, Michael (EEO)

**Subject:** VW Group Decision Information for Audi A8 3.0l

Hello David,

In Jim Snyder's absence, most of next week, can you please arrange a confirmatory test date of Monday April 7<sup>th</sup> for the following vehicle. We recently completed the submission of test data and related decision information into Verify. It is our understanding that Jim wants to confirm the FTP, HWY and US06 cycles for this vehicle.

Model Year = 2015

Manufacturer Code = VGA

**Ex. 4 - CBI** (Audi A8 with 3.0l gasoline engine)

Configuration # = 0

Given the tight product launch timing for this model, it would be greatly appreciated you could confirm this test date as soon as possible to avoid vehicle shipping delays from Germany.

Please contact me if you have any questions or concerns.

Regards,

Bill Rodgers

Emissions Certification Engineer

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

Auburn Hills, MI

(248) 754-4219

[william.rodgers@vw.com](mailto:william.rodgers@vw.com)

**To:** Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]  
**Cc:** Giles, Michael (EEO)[michael.giles@vw.com]; Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Mon 3/3/2014 7:10:49 PM  
**Subject:** RE: Help requested with GHG Discrepancy

Thank you Bob.

When will the changes to your report have results displayed to four places? We wouldn't have to bother with this next year.

Best regards,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**From:** Peavyhouse, Robert [mailto:Peavyhouse.Robert@epa.gov]  
**Sent:** Monday, March 03, 2014 1:48 PM  
**To:** Giles, Michael (EEO)  
**Cc:** Thomas, Richard (EEO)  
**Subject:** RE: Help requested with GHG Discrepancy

The value comes from:

Gasoline GHG = 302.0

E85 GHG = 299.4

The model type value with AMFA equivalent credits becomes the average of the 2

Final =  $((302.0) + (0.15 * 299.4)) / 2 = 173.455$

This value rounds down to 173 for averaging into the fleet calculation.

This is exactly why I was telling you that I want our report changed so that it displays 4 decimal places.

Just displaying 173.5 kind of misleads mfrs to round this value up to 174.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Giles, Michael (EEO) [<mailto:michael.giles@vw.com>]  
**Sent:** Monday, March 03, 2014 1:06 PM  
**To:** Peavyhouse, Robert  
**Cc:** Thomas, Richard (EEO)  
**Subject:** RE: Help requested with GHG Discrepancy

Thanks Bob,

Could you check the LDT tab for index # ADX105. It shows GHG 1-place value of 173.5 which is somehow rounded to 173. Of course we think in any case it should be rounded to 174.

Please advise or call me if you can.



Thanks,

Mike

Michael Giles

Certification Engineer – EEO

VW Group of America

(248) 754-4229

**From:** Peavyhouse, Robert [<mailto:Peavyhouse.Robert@epa.gov>]

**Sent:** Monday, March 03, 2014 10:59 AM

**To:** Giles, Michael (EEO)

**Cc:** Thomas, Richard (EEO)

**Subject:** RE: Help requested with GHG Discrepancy

Here is my duplication of the Verify values.

The next step is to verify individual model type values for mismatch.

If you identify them, I can run the calcs for individual model types as you request them.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Giles, Michael (EEO) [<mailto:michael.giles@vw.com>]  
**Sent:** Tuesday, February 25, 2014 3:30 PM  
**To:** Peavyhouse, Robert  
**Cc:** Thomas, Richard (EEO)  
**Subject:** RE: Help requested with GHG Discrepancy

Hello Bob,

First some good news - Please ignore my request below regarding the issue with our MT index #91. We have corrected this by changing the DF rounding to whole numbers prior to adding. Once I found your email from last year that helped. NOTE – this is contrary to Dave Goods instructions to round to 1 place (!)

But, I do have another question . Our LDT “ final” calculation is off by a couple tenths, and it is not clear why. I am attaching a simple worksheet to show my calculations as well as the latest draft Verify report.

We hit the PC number right on for both baseline and final but not sure why there is a difference with this LDT fleet.

Any advice you can give here would be appreciated.

Thanks,

Mike

**From:** Giles, Michael (EEO)  
**Sent:** Monday, February 24, 2014 10:42 AM  
**To:** Peavyhouse, Robert ([Peavyhouse.Robert@epa.gov](mailto:Peavyhouse.Robert@epa.gov))  
**Cc:** Thomas, Richard (EEO) ([Richard.Thomas@vw.com](mailto:Richard.Thomas@vw.com))  
**Subject:** Help requested with GHG Discrepancy

Hello Bob,

We are working on our final CAFÉ / GHG report, and are in the process of resolving some differences.

We kindly request your help with one issue, where we find a difference between the certification CSI and the CAFÉ/GHG report values.

There is a single configuration for this model type:

MFR Code	VWX
Model Type Index:	# 91
City Test # 360	DADX10021373 CREE: 359 DF: 0.5 rounded CREE:
Highway Test # 230	DADX10021373 CREE: 230 DF: 0.5 rounded CREE:

The FTP value of  $359 + 0.5 = 360$  is found in the CSI and matches our internal data.

However, the CAFE/GHG report from VERIFY shows a value of 359 for the city test.

Per GHG rounding guidance from Dave good (last year), we do as follows:

- Round the sum of the CREE/OCREE constituents (from step 2) to nearest whole number.
- Apply city Super DF to the city CREE/OCREE test result and the hwy Super DF to the hwy CREE/OCREE test result. \*\*\* **Rounded to 1 place** \*\*\*
- After applying Super DFs, round the resultant CREE/OCREE test results to nearest whole number

We believe the 360 as calculated here and in the CSI (and consistent with the rounding rules) should be the correct value.

Please advise, or call if you would like to discuss.

Regards,

Mike

Michael Giles

Certification Engineer – EEO

VW Group of America

(248) 754-4229

**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**Cc:** Giles, Michael (EEO)[michael.giles@vw.com]; Good, David[good.david@epa.gov]  
**From:** Peavyhouse, Robert  
**Sent:** Mon 3/3/2014 8:19:43 PM  
**Subject:** RE: Help requested with GHG Discrepancy

As of now it is way down on the list. It is a “would be nice” feature.

All of the things that are broken or missing have a higher priority.

We are still working on basic things like calculating all electric model types, hydrogen fuel cells, etc.

Once we get all that stuff working and a budget, then hopefully we can get it fixed.

Fortunately it is a quick, cheap fix, so maybe we can get it in sooner rather than later.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Monday, March 03, 2014 2:11 PM  
**To:** Peavyhouse, Robert  
**Cc:** Giles, Michael (EEO); Good, David  
**Subject:** RE: Help requested with GHG Discrepancy

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*Richard E. Thomas*

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Engineering and Environmental Office (EEO)

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Michael Giles

Certification Engineer – EEO

VW Group of America



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**Sent:** Tuesday, February 25, 2014 3:30 PM  
**To:** Peavyhouse, Robert  
**Cc:** Thomas, Richard (EEO)  
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Michael Giles

Certification Engineer – EEO

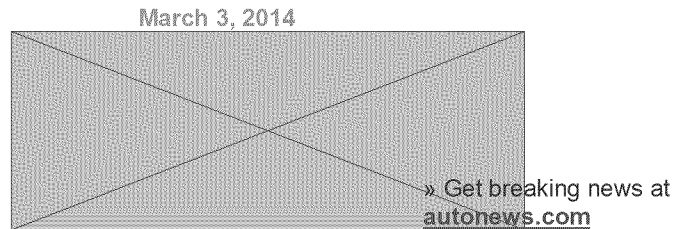
VW Group of America

(248) 754-4229

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 3/3/2014 9:43:22 PM  
**Subject:** DAILY: Mother Nature chills showroom traffic, sales in Feb. | EPA orders clampdown on tailpipe emissions | Jeep to unveil Italy-built Renegade subcompact SUV

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**Cadillac clears the air on  
'Poolside'**



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### **Mother Nature chills showroom traffic, sales**

UPDATED: 3/3/14 3:43 pm ET

7:00 am U.S. ET | Mar 3

U.S. auto sales were flat in February as rising showroom traffic in recent weeks fueled hope that the industry would finally break out of its three-month, weather-crimped slump in March. Total sales fell by just 357 units, or 0.03, percent. ... » [READ](#)

### **EPA orders clampdown on tailpipe emissions**

11:41 am U.S. ET | Mar 3

In the Obama administration's latest push to clean up the new-car fleet and deal with America's lingering air pollution problems, the EPA today finalized stricter tailpipe emissions standards that will get ramp up from 2017 to 2025. ... » [READ](#)

### **Jeep to unveil Italy-built Renegade subcompact SUV**

12:01 am U.S. ET | Mar 3

Jeep tomorrow will unveil its new Renegade subcompact SUV. The 'baby' Jeep is key to parent Fiat

Chrysler Automobiles' ambitious global growth plans for the iconic off-road brand. ... » [READ](#)

## **Apple rolls out CarPlay technology in Ferrari, Mercedes and Volvo vehicles**

UPDATED: 3/3/14 2:28 pm ET - new story  
9:21 am U.S. ET | Mar 3

Apple says an automotive version of its mobile operating system, dubbed CarPlay, will debut in Ferrari, Mercedes-Benz and Volvo vehicles this week and will enable users to access functions of their iPhones on the vehicles' infotainment screens. ... » [READ](#)

## **Fiat's UK-style revival plan faces Italian hurdles**

12:01 am U.S. ET | Mar 2

Fiat CEO Sergio Marchionne plans to use sporty new Alfa Romeos and sleek Maseratis in a bid to repeat in Italy what British brands like Mini and Jaguar have achieved under foreign ownership. ... » [READ](#)

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**» Global vehicle sales will likely peak in next decade, analysts say**

**Alfa unlikely to get Mazda-made roadster, sources say**

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**Cadillac clears the air on 'Poolside'**

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**Global vehicle sales will likely peak in next decade, analysts say**

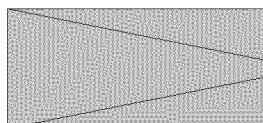
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3:18 pm U.S. ET | Mar 3



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**» 3/20 - Is your website engaging?**

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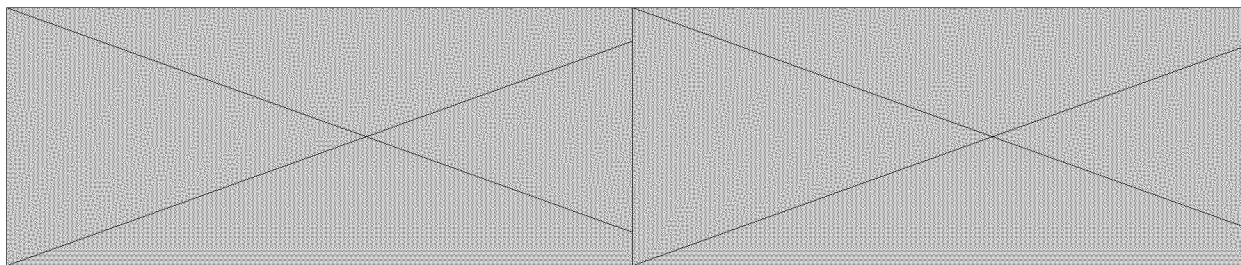
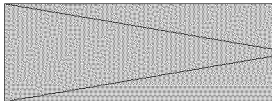
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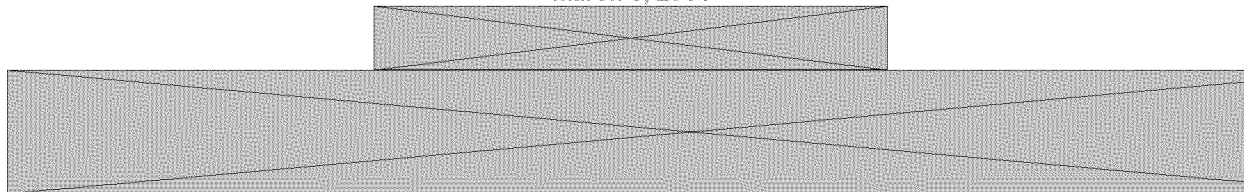
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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 3/3/2014 11:18:56 PM  
**Subject:** U.S. SALES REPORT: February sales tale -- advances, setbacks, lots of volatility

March 3, 2014



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4:52 pm U.S. ET | Mar 3

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### WINNERS AND LOSERS

% change in sales among brands from February 2013

Winners	Feb.	Winners 2 mos.	Losers	Feb.	Losers	2 mos.
1 Maserati	426.4%	1 Maserati	324.5%	1 Mini	- 42.8%	- 37.3%
2 Jeep	47.4%	2 Jeep	42.9%	2 Volvo	- 18.0%	- 20.1%
3 Lincoln	36.4%	3 Lincoln	39.2%	3 Volkswagen division	- 13.8%	- 16.3%
4 Jaguar	35.2%	4 Jaguar	33.2%	4 Dodge	- 10.6%	- 14.4%
5 Ram	27.9%	5 Ram	26.1%	5 Scion	- 10.4%	- 14.1%

### Top Selling Light Vehicles

	Feb.		2 mos.
1 Ford F series	55,882	Ford F series	102,4
2 Chevrolet Silverado	36,584	Chevrolet Silverado	65,510
3 Nissan Altima	30,849	Ram	54,374
4 Ram	29,303	Nissan Altima	53,364
5 Toyota Camry	28,998	Toyota Camry	52,330
6 Toyota Corolla/Matrix	25,299	Toyota Corolla/Matrix	48,050
7 Honda Accord	24,622	Honda Accord	45,220
8 Ford Fusion	23,898	Ford Fusion	44,610
9 Ford Escape	23,145	Honda Civic	43,390

—

10 Chevrolet  
Cruze

Ford  
Escape

Top Selling Cars

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4 Honda Accord	24,622	45,226
5 Ford Fusion	23,898	44,615
6 Chevrolet Cruze	21,836	43,399
7 Honda Civic	21,575	38,664
8 Chevrolet Malibu	17,448	31,719
9 Hyundai Elantra	16,393	29,270
10 Ford Focus	15,926	27,929

Top Selling Light Trucks

	Feb.	2 mos.
1 Ford F series	55,882	102,400
2 Chevrolet Silverado	36,584	65,511
3 Ram	29,303	54,371
4 Ford Escape	23,145	42,600
5 Chevrolet Equinox	21,587	38,990
6 Honda CR-V	20,759	36,130
7 Nissan Rogue	17,197	33,330
8 Toyota RAV4	16,451	31,020
9 GMC Sierra	14,232	26,730
10 Ford Explorer	13,924	25,350

Table sorted by year-to-date sales

	Feb. 2014	Feb. 2013	% change	2 mos. 2014	2 mos. 2013	% change
Buick	19,192	16,150	19%	32,470	29,613	10%
Cadillac	13,437	13,845	-3%	24,823	26,961	-8%
Chevrolet	153,913	158,541	-3%	273,002	295,845	-8%
GMC	35,562	35,778	-1%	63,295	66,594	-5%

<b>General Motors</b>						
Ford division	176,688	190,427	-7%	324,209	352,099	-8%
Lincoln	6,661	4,883	36%	12,634	9,074	39%
<b>Ford Motor Co.</b>	<b>183,349</b>	<b>195,310</b>	<b>-6%</b>	<b>336,843</b>	<b>361,173</b>	<b>-7%</b>
Lexus	18,855	17,339	9%	36,492	33,550	9%
Scion	4,529	5,052	-10%	8,540	9,945	-14%
Toyota Division	135,900	143,986	-6%	260,617	280,607	-7%
<i>Toyota/Scion</i>	<i>140,429</i>	<i>149,038</i>	<i>-6%</i>	<i>269,157</i>	<i>290,552</i>	<i>-7%</i>
<b>Toyota Motor Sales</b>	<b>159,284</b>	<b>166,377</b>	<b>-4%</b>	<b>305,649</b>	<b>324,102</b>	<b>-6%</b>
Chrysler Division	25,230	25,083	1%	46,343	45,779	1%
Dodge	49,744	55,639	-11%	84,649	98,866	-14%
Ram	30,481	23,827	28%	56,514	44,814	26%
<i>Dodge/Ram</i>	<i>80,225</i>	<i>79,466</i>	<i>1%</i>	<i>141,163</i>	<i>143,680</i>	<i>-2%</i>
Fiat	3,465	3,302	5%	6,687	5,805	15%
Jeep	45,946	31,164	47%	87,856	61,482	43%
<b>Chrysler Group***</b>	<b>154,866</b>	<b>139,015</b>	<b>11%</b>	<b>282,049</b>	<b>256,746</b>	<b>10%</b>
Infiniti	9,729	9,147	6%	18,727	16,273	15%
Nissan Division	105,631	90,489	17%	187,103	164,282	14%
<b>Nissan North America</b>	<b>115,360</b>	<b>99,636</b>	<b>16%</b>	<b>205,830</b>	<b>180,555</b>	<b>14%</b>
Acura	11,545	11,364	2%	22,368	20,853	7%
Honda Division	88,860	96,623	-8%	169,668	180,760	-6%
<b>American Honda Motor Co.</b>	<b>100,405</b>	<b>107,987</b>	<b>-7%</b>	<b>192,036</b>	<b>201,613</b>	<b>-5%</b>
Hyundai division	49,003	52,311	-6%	93,008	96,024	-3%
Kia	41,218	41,505	-1%	78,229	77,807	1%
<b>Hyundai-Kia</b>	<b>90,221</b>	<b>93,816</b>	<b>-4%</b>	<b>171,237</b>	<b>173,831</b>	<b>-2%</b>
Audi	10,881	10,877	0%	20,982	20,933	0%
Bentley	191	180	6%	383	368	4%
Lamborghini*	59	57	4%	118	114	4%
Porsche	3,232	2,805	15%	6,328	6,163	3%
VW division	27,112	31,456	-14%	50,606	60,474	-16%
<b>VW Group Of America</b>	<b>41,475</b>	<b>45,375</b>	<b>-9%</b>	<b>78,417</b>	<b>88,052</b>	<b>-11%</b>
<b>Subaru</b>	<b>34,909</b>	<b>28,163</b>	<b>24%</b>	<b>67,909</b>	<b>55,826</b>	<b>22%</b>
Mercedes-Benz	24,030	23,268	3%	47,922	46,846	2%
Smart USA	941	783	20%	1,462	1,264	16%
<b>Daimler AG</b>	<b>24,971</b>	<b>24,051</b>	<b>4%</b>	<b>49,384</b>	<b>48,110</b>	<b>3%</b>
BMW division	22,017	21,311	3%	40,270	37,824	7%
Mini	2,459	4,302	-43%	5,002	7,984	-37%
Rolls-Royce*	86	84	2%	172	168	2%
<b>BMW Group</b>	<b>24,562</b>	<b>25,697</b>	<b>-4%</b>	<b>45,444</b>	<b>45,976</b>	<b>-1%</b>
<b>Mazda</b>	<b>24,341</b>	<b>24,936</b>	<b>-2%</b>	<b>43,155</b>	<b>46,254</b>	<b>-7%</b>
Jaguar	1,552	1,148	35%	2,899	2,177	33%
Land Rover	4,006	3,905	3%	8,680	8,105	7%
<b>Jaguar Land Rover N.A.</b>	<b>5,558</b>	<b>5,053</b>	<b>10%</b>	<b>11,579</b>	<b>10,282</b>	<b>13%</b>
Mitsubishi	5,977	6,051	-1%	10,844	10,710	1%
<b>Volvo Cars N.A.</b>	<b>3,991</b>	<b>4,867</b>	<b>-18%</b>	<b>7,783</b>	<b>9,742</b>	<b>-20%</b>
Maserati	837	159	426%	1,405	331	325%
Suzuki	-	1,764	-100%	-	3,250	-100%
<b>Other**</b>	<b>257</b>	<b>253</b>	<b>2%</b>	<b>514</b>	<b>506</b>	<b>2%</b>
<b>U.S. LIGHT VEHICLE</b>	<b>1,192,467</b>	<b>1,192,824</b>	<b>0%</b>	<b>2,203,668</b>	<b>2,236,072</b>	<b>-1%</b>

\*Estimate

\*\*Includes estimates for Aston Martin, Ferrari and Lotus

\*\*\*Fiat S.p.A. purchased the remaining 41.46% stake in Chrysler Group from the UAW's VEBA Trust on Jan. 20, 2014.

## Highlights

Mfgr. highest volume - Feb.	GM	222,104	Mfgr. highest volume - 2 mos.	GM	393,590
Mfgr. gained the most volume - Feb.	Chrysler Group	15,851	Mfgr. gained the most volume - 2 mos.	Chrysler Group	25,303
Mfgr. lost the most volume - Feb.	Ford Motor	(11,961)	Mfgr. lost the most volume - 2 mos.	GM	(25,423)
Mfgr. highest % increase - Feb.	Maserati	426%	Mfgr. highest % increase - 2 mos.	Maserati	325%
Mfgr. biggest % drop - Feb.	Volvo	-18%	Mfgr. biggest % drop - 2 mos.	Volvo	-20%

Brand highest volume - Feb.	Ford	176,688	Brand highest volume - 2 mos.	Ford	324,209
Brand gained the most volume - Feb.	Nissan	15,142	Brand gained the most volume - 2 mos.	Jeep	26,374
Brand lost the most volume - Feb.	Ford	(13,739)	Brand lost the most volume - 2 mos.	Ford	(27,890)
Brand highest % increase - Feb.	Maserati	426%	Brand highest % increase - 2 mos.	Maserati	325%
Brand biggest % drop - Feb.	Mini	-43%	Brand biggest % drop - 2 mos.	Mini	-37%

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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Kerry Corsiglia  
**Sent:** Mon 3/3/2014 11:46:19 PM  
**Subject:** Re: U.S. SALES REPORT: February sales tale -- advances, setbacks, lots of volatility

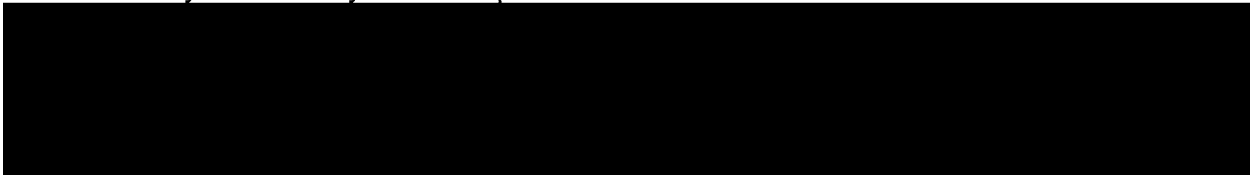
Just looking at some...seems ok.

Sent from my iPad

On Mar 3, 2014, at 6:43 PM, "Grunder, Christopher" <[grundler.christopher@epa.gov](mailto:grundler.christopher@epa.gov)> wrote:

Not read a countryman review. [Edmunds.com](http://Edmunds.com) is one site.

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE network.



K....so is the countryman not getting as good reviews? Where do you read these reviews?

Sent from my iPad

On Mar 3, 2014, at 6:35 PM, "Grunder, Christopher" <[grundler.christopher@epa.gov](mailto:grundler.christopher@epa.gov)> wrote:

Hardtop is their bread and butter and may have been getting long in the tooth.  
Sales often go down at end of a model run (6 years or so) because people wait  
for the new version to come out

Sent from my BlackBerry 10 smartphone on the Verizon Wireless 4G LTE  
network.



Ummm-what's wrong with them?! Maybe there's a reason why!...also, that article  
seemed a little confusing..it repeated itself it seemed...

Sent from my iPad

On Mar 3, 2014, at 6:21 PM, "Grunder, Christopher"  
<[grundler.christopher@epa.gov](mailto:grundler.christopher@epa.gov)> wrote:

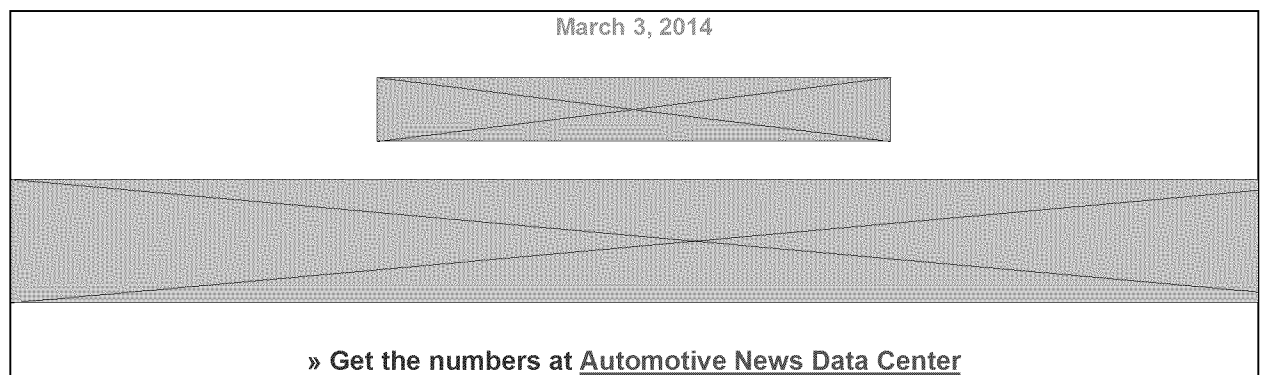
Sorry—mini sales down 42% from last feb! They should be hungry for a sale!

**From:** Automotive News [<mailto:autonews@crainnewsalerts.com>]

**Sent:** Monday, March 03, 2014 6:19 PM

**To:** Grundler, Christopher

**Subject:** U.S. SALES REPORT: February sales tale -- advances, setbacks, lots of volatility



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4:52 pm U.S. ET | Mar 3



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Toyota Division	135,900	143,986	-6%	260,617	280,607	-7%
Toyota/Scion	<i>140,429</i>	<i>149,038</i>	<i>-6%</i>	<i>269,157</i>	<i>290,552</i>	<i>-7%</i>
Toyota Motor Sales	<b>159,284</b>	<b>166,377</b>	<b>-4%</b>	<b>305,649</b>	<b>324,102</b>	<b>-6%</b>
Chrysler Division	25,230	25,083	1%	46,343	45,779	1%
Dodge	49,744	55,639	-11%	84,649	98,866	-14%
Ram	30,481	23,827	28%	56,514	44,814	26%
Dodge/Ram	<i>80,225</i>	<i>79,466</i>	<i>1%</i>	<i>141,163</i>	<i>143,680</i>	<i>-2%</i>
Fiat	3,465	3,302	5%	6,687	5,805	15%
Jeep	45,946	31,164	47%	87,856	61,482	43%
Chrysler Group***	<b>154,866</b>	<b>139,015</b>	<b>11%</b>	<b>282,049</b>	<b>256,746</b>	<b>10%</b>
Infiniti	9,729	9,147	6%	18,727	16,273	15%
Nissan Division	105,631	90,489	17%	187,103	164,282	14%
Nissan North America	<b>115,360</b>	<b>99,636</b>	<b>16%</b>	<b>205,830</b>	<b>180,555</b>	<b>14%</b>
Acura	11,545	11,364	2%	22,368	20,853	7%
Honda Division	88,860	96,623	-8%	169,668	180,760	-6%
American Honda Motor Co.	<b>100,405</b>	<b>107,987</b>	<b>-7%</b>	<b>192,036</b>	<b>201,613</b>	<b>-5%</b>
Hyundai division	49,003	52,311	-6%	93,008	96,024	-3%
Kia	41,218	41,505	-1%	78,229	77,807	1%
Hyundai-Kia	<b>90,221</b>	<b>93,816</b>	<b>-4%</b>	<b>171,237</b>	<b>173,831</b>	<b>-2%</b>
Audi	10,881	10,877	0%	20,982	20,933	0%
Bentley	191	180	6%	383	368	4%

Lamborghini*						
Porsche	3,232	2,805	15%	6,328	6,163	3%
VW division	27,112	31,456	-14%	50,606	60,474	-16%
VW Group Of America	<b>41,475</b>	<b>45,375</b>	<b>-9%</b>	<b>78,417</b>	<b>88,052</b>	<b>-11%</b>
Subaru	<b>34,909</b>	<b>28,163</b>	<b>24%</b>	<b>67,909</b>	<b>55,826</b>	<b>22%</b>
Mercedes-Benz	24,030	23,268	3%	47,922	46,846	2%
Smart USA	941	783	20%	1,462	1,264	16%
Daimler AG	<b>24,971</b>	<b>24,051</b>	<b>4%</b>	<b>49,384</b>	<b>48,110</b>	<b>3%</b>
BMW division	22,017	21,311	3%	40,270	37,824	7%
Mini	2,459	4,302	-43%	5,002	7,984	-37%
Rolls-Royce*	86	84	2%	172	168	2%
BMW Group	<b>24,562</b>	<b>25,697</b>	<b>-4%</b>	<b>45,444</b>	<b>45,976</b>	<b>-1%</b>
Mazda	<b>24,341</b>	<b>24,936</b>	<b>-2%</b>	<b>43,155</b>	<b>46,254</b>	<b>-7%</b>
Jaguar	1,552	1,148	35%	2,899	2,177	33%
Land Rover	4,006	3,905	3%	8,680	8,105	7%
Jaguar Land Rover N.A.	<b>5,558</b>	<b>5,053</b>	<b>10%</b>	<b>11,579</b>	<b>10,282</b>	<b>13%</b>
Mitsubishi	<b>5,977</b>	<b>6,051</b>	<b>-1%</b>	<b>10,844</b>	<b>10,710</b>	<b>1%</b>
Volvo Cars N.A.	<b>3,991</b>	<b>4,867</b>	<b>-18%</b>	<b>7,783</b>	<b>9,742</b>	<b>-20%</b>
Maserati	<b>837</b>	<b>159</b>	<b>426%</b>	<b>1,405</b>	<b>331</b>	<b>325%</b>
Suzuki	-	<b>1,764</b>	<b>-100%</b>	-	<b>3,250</b>	<b>-100%</b>
Other**	<b>257</b>	<b>253</b>	<b>2%</b>	<b>514</b>	<b>506</b>	<b>2%</b>
U.S. LIGHT VEHICLE	<b>1,192,467</b>	<b>1,192,824</b>	<b>0%</b>	<b>2,203,668</b>	<b>2,236,072</b>	<b>-1%</b>

\*Estimate

\*\*Includes estimates for Aston Martin, Ferrari and Lotus

\*\*\*Fiat S.p.A. purchased the remaining 41.46% stake in Chrysler Group from the UAW's VEBA Trust on Jan. 20, 2014.

## Highlights

Mfgr. highest volume - Feb.	GM	222,104	Mfgr. highest volume - 2 mos.	GM	393,590
Mfgr. gained the most volume - Feb.	Chrysler Group	15,851	Mfgr. gained the most volume - 2 mos.	Chrysler Group	25,303
Mfgr. lost the most volume - Feb.	Ford Motor	(11,961)	Mfgr. lost the most volume - 2 mos.	GM	(25,423)
Mfgr. highest % increase - Feb.	Maserati	426%	Mfgr. highest % increase - 2 mos.	Maserati	325%
Mfgr. biggest % drop - Feb.	Volvo	-18%	Mfgr. biggest % drop - 2 mos.	Volvo	-20%

Brand highest volume - Feb.	Ford	176,688	Brand highest volume - 2 mos.	Ford	324,209
Brand gained the most volume - Feb.	Nissan	15,142	Brand gained the most volume - 2 mos.	Jeep	26,374
Brand lost the most volume - Feb.	Ford	(13,739)	Brand lost the most volume - 2 mos.	Ford	(27,890)
Brand highest % increase - Feb.	Maserati	426%	Brand highest % increase - 2 mos.	Maserati	325%
Brand biggest % drop - Feb.	Mini	-43%	Brand biggest % drop - 2 mos.	Mini	-37%

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**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Tue 3/4/2014 6:00:42 PM  
**Subject:** 2015 FE Guide errors  
VGA2015 FEGuide-all rel dates-no-sales-3-3-2014.xlsx

Richard,

The Diesel Touareg had an error. See attached.

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Wednesday, February 26, 2014 1:30 PM  
**To:** Good, David  
**Subject:** RE: please call

Oh thanks Dave. It all looks good.

Richard

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Wednesday, February 26, 2014 12:44 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: please call

Richard,

Here you go,

[I had macro problems yesterday.]

Dave

**From:** Thomas, Richard (EEO) [<mailto:Richard.Thomas@vw.com>]  
**Sent:** Wednesday, February 26, 2014 10:12 AM  
**To:** Good, David  
**Subject:** please call  
**Importance:** High

Hi Dave;

I had to make changes to 2015 VGA index 007 and 006 and the annual fuel cost and 5 year savings values. If you ran that report yesterday could you see that the label audit is run again today to pick up these changes.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

EPA com	VERIFY cc	Model Yr (Mfr Name Division (t	Carline	Verify Mfr Index (Mo	Eng Displ # Cyl
		2015 Volkswagen Audi	A3	VGA	7 1.8 4
		2015 Volkswagen Audi	A3 Cabriolet	VGA	6 1.8 4
		2015 Volkswagen Audi	A3 Cabriolet	VGA	5 2.0 4
		2015 Volkswagen Audi	A3 quattro	VGA	4 2.0 4
		2015 Volkswagen Audi	A8	VGA	11 4.0 8
		2015 Volkswagen Audi	A8L	VGA	10 4.0 8
Diesel;		2015 Volkswagen Audi	Q7	VGA	12 3.0 6
		2015 Volkswagen Audi	S8	VGA	9 4.0 8
		2015 Volkswagen Audi	TT Coupe	VGA	2 2.0 4
		2015 Volkswagen Audi	TT Roadster	VGA	3 2.0 4
		2015 Volkswagen Volkswagen	GTI	VGA	1 2.0 4
		2015 Volkswagen Volkswagen	GTI	VGA	8 2.0 4
Diesel; Err	Y	2015 Volkswagen Volkswagen	Touareg	VGA	13 3.0 6

Trans as I	City FE (G	Hwy FE (G	Comb FE	Low'd City	Low'd HW	Low'd Cor	City Unad	Hwy Unad	Comb Unad
Auto(AM-S	23	33	27				28.9000	46.6000	34.8580
Auto(AM-S	24	35	28				30.5000	47.0000	36.2224
Auto(AM-S	23	32	26				29.0000	44.2000	34.3094
Auto(AM-S	24	33	27				30.0000	44.6000	35.1828
Auto(S8)	18	30	22				22.5929	39.4000	27.9601
Auto(S8)	18	29	22				22.2780	39.1000	27.6266
Auto(S8)	19	28	22				22.8000	39.1000	28.0649
Auto(S8)	17	27	20				19.9000	36.4000	24.9995
Auto(AM-S	22	31	26				28.3669	42.1911	33.2728
Auto(AM-S	22	31	26				28.3669	42.1911	33.2728
Auto(AM-S	25	33	28				30.7000	45.3000	35.9078
Manual(M	25	34	28				30.0000	46.4000	35.6740
Auto(S8)	20	29	23				24.1000	41.0000	29.5883



City	Highway	City	Highway	Unrd Comb Unr	Guzzler?	Air Aspir	I Air Aspira	Trans	Trans Des	Trans, Otr	# Gears
23.4556	33.3421	27.0673				TC	Turbochar	AMS	Automate		6
24.3444	34.5845	28.0867				TC	Turbochar	AMS	Automate		6
23.3120	31.5429	26.4136				TC	Turbochar	AMS	Automate		6
24.0818	32.6198	27.2970				TC	Turbochar	AMS	Automate		6
18.2315	29.5343	22.0244				TC	Turbochar	SA	Semi-Auto		8
17.9485	28.5015	21.5369				TC	Turbochar	SA	Semi-Auto		8
18.7400	27.6200	21.9099				TC	Turbochar	SA	Semi-Auto		8
16.5369	26.7008	19.9551				TC	Turbochar	SA	Semi-Auto		8
22.3665	31.1759	25.6242				TC	Turbochar	AMS	Automate		6
22.3665	31.1759	25.6242				TC	Turbochar	AMS	Automate		6
24.6434	32.6158	27.6891				TC	Turbochar	AMS	Automate		6
24.9095	34.2917	28.4070				TC	Turbochar	M	Manual		6
19.6490	28.9961	22.9829				TC	Turbochar	SA	Semi-Auto		8

Lockup T	Trans C	Drive Sys	Drive Des	Primary B	Max Ethar	Max Biodi	Range1 - I	Fuel Usag	Fuel Usag
Automated	Manual with	paddles)	2-Wheel DFVGAV02.0		15		GP	Gasoline (F	
Automated	Manual with	paddles)	2-Wheel DFVGAV02.0		15		GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV02.0		15		GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV02.0		15		GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV04.0		15		GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV04.0		15		GP	Gasoline (F	
Y	N	A	All Wheel IFVGAT03.0NU3			5	DU	Diesel, ultr	
Y	N	A	All Wheel IFVGAV04.0		15		GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV02.0		15		GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV02.0		15		GP	Gasoline (F	
Automated	Manual with	paddles)	2-Wheel DFVGAV02.0		15		GP	Gasoline (F	
N	N	F	2-Wheel DFVGAV02.0		15		GP	Gasoline (F	
Y	N	A	All Wheel IFVGAT03.0NU2			5	DU	Diesel, ultr	

Model	Year	Make	Model	Year	Make	Gas Guzzl	Gas Guzzl	2Dr Pass	2Dr Lugg	4Dr Pass	4Dr Lugg	Htchbk Pa	Htchbk Lu
Mpl	1984	Pe	1984	Pe	1984	Not exempt				86	12		
Mpl	1984	Pe	1984	Pe	1984	Not exempt		79	10				
Mpl	1984	Pe	1984	Pe	1984	Not exempt		79	10				
Mpl	1984	Pe	1984	Pe	1984	Not exempt				86	10		
Mpl	1984	Pe	1984	Pe	1984	Not exempt				100	15		
Mpl	1984	Pe	1984	Pe	1984	Not exempt				107	15		
Mpl	1984	Pe	1984	Pe	1984	Truck							
Mpl	1984	Pe	1984	Pe	1984	Not exempt				100	15		
Mpl	1984	Pe	1984	Pe	1984	Not exempt		74	13				
Mpl	1984	Pe	1984	Pe	1984	Not exempt							
Mpl	1984	Pe	1984	Pe	1984	Not exempt						93	14
Mpl	1984	Pe	1984	Pe	1984	Not exempt						93	14
Mpl	1984	Pe	1984	Pe	1984	Truck							

Annual Fuel Economy	EPA Calculation	Comment	City2 FE (l/100mi)	Highway2 FE (l/100mi)	Combined2 FE (l/100mi)	Low'd City (l/100mi)	Low'd Hwy (l/100mi)	Low'd Cor (l/100mi)	City2 Unadjusted
2100	2100	corrected fuel unit price							
2050	2050	refresh release date, corrected interior volumes, fuel unit price correction							
2200	2200	refreshed release date, interior volume corrected							
2100	2100	carline interior volumes corrected from 2 door to 4 door							
2600	2600								
2600	2600	FUEL AND GHG RATING CORRECTED TO 5							
2550	2550								
2850	2850	S/S indicator to yes, back to NO.							
2200	2200								
2200	2200								
2050	2050	SMOG corrected to 9 as this is a nationwide Tier 2 BIN 2 and Calif PZEV							
2050	2050								
2450	2450								

Model Year Fuel Type (VW Fuel Type) Alternative Fuel  
Hwy2 City2 Comb2 Unit Hwy2 City2 Comb2 Unit Range2 - Fuel2 Use2 Fuel2 Use2 Fuel2 Unit Fuel2 Unit

Relative Fuel Eff 12 Ann City	CO2 I	Hwy CO2	Comb CO2	Fuel 2 EPA	Description	Intake Val	Exhaust V	Carline C	Carline C
					SIDI;	2	23		Subcompa
					SIDI;	2	23		Subcompa
					SIDI;	2	23		Subcompa
					SIDI;	2	23		Subcompa
					SIDI;	2	25		Midsize Ca
					SIDI;	2	26		Large Cars
						2	233		Standard SUV 4W
					SIDI;	2	25		Midsize Ca
					SIDI;	2	23		Subcompa
					SIDI;	2	21		Two Seate
					SIDI;	2	24		Compact C
					SIDI;	2	24		Compact C
						2	233		Standard SUV 4W

Car/Truck	Calc Appr Sales	Release DEPA FE Label Dates	Unique La	Label Rec	Relabel	Relabel D
car	Vehicle Specific 5-cycle	2/25/2014	15406	N	N	
car	Vehicle Specific 5-cycle	4/2/2014	15407	N	N	
car	Vehicle Specific 5-cycle	6/12/2014	15317	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15320	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15385	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15386	N	N	
D	Vehicle Specific 5-cycle	6/12/2014	15408	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15400	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15302	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15303	N	N	
car	Vehicle Specific 5-cycle	4/1/2014	15293	N	N	
car	Vehicle Specific 5-cycle	4/1/2014	15313	N	N	
D	Vehicle Specific 5-cycle	9/15/2014	15409	N	N	

Suppress	Police/Em	Comment	Cyl Deact	Cyl Deact	Var Valve	Var Valve	Var Valve	Var Valve	Energy St
N	N	1.8L Engine	N	Y	CONTINU	CN			
N	N	1.8L Engine	N	Y	CONTINU	CN			
N	N	2.0L Engine	N	Y	CONTINU	CY		Audi Valve	
N	N	2.0L Engine	N	Y	CONTINU	CY		Audi Valve	
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Engine cod	N	N		N			
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Generator	N	Y	CONTINU	CN			
N	N	Generator	N	Y	CONTINU	CN			
N	N	2.0L Engine	N	Y	CONTINU	CY		Audi Valve	
N	N	2.0L Engine	N	Y	CONTINU	CY		Audi Valve	
N	N	Engine Coc	N	N		N			



Device Desc	# Batteries	Battery Ty	Battery Ty	Total Volt	Batt Ener	Batt Spec	Batt Char	Comment	# Capacit
-------------	-------------	------------	------------	------------	-----------	-----------	-----------	---------	-----------

alVSe d i a s t a b r e l l o b e f l i z e r i o ( l a t v a l v e s a b d e s i g n e d ) d i t b f u s e c o n j e c t i o n l a t e r i d i g n i z i o n f o r e a d i t i v e c a t h o d i c a t i o n s a b d e s c r i b									
---	--	--	--	--	--	--	--	--	--

alVSe d i a s t a b r e l l o b e f l i z e r i o ( l a t v a l v e s a b d e s i g n e d ) d i t b f u s e c o n j e c t i o n l a t e r i d i g n i z i o n f o r e a d i t i v e c a t h o d i c a t i o n s a b d e s c r i b									
---	--	--	--	--	--	--	--	--	--

second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

Motor	Ger	Rated Mot	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Cell V	Off Board	Camless V	Oil Viscosi
					GDI	Spark Ignit			N	5W40 VW
					GDI	Spark Ignit			N	5W40 VW
					GDI	Spark Ignit			N	5W40 VW
					GDI	Spark Ignit			N	5W40 VW
h					GDI	Spark Ignit			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
					CRDI	Common F			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
					GDI	Spark IgnitN			N	5W40
					GDI	Spark IgnitN			N	5W40
					GDI	Spark Ignit			N	5W40 VW
					GDI	Spark Ignit			N	5W40 VW
					CRDI	Common F			N	5W30 VW

Stop/Start	Stop/Start	Trans in FE	Trans as I	Model Typ	Charge De	Charge De	Charge Su	Charge Su	EPA Calcul
N	No	Auto(AM-5	Auto(AM-5						
N	No	Auto(AM-5	Auto(AM-5						
N	No	Auto(AM-5	Auto(AM-5						
N	No	Auto(AM-5	Auto(AM-5						
¥0700	Yes	Auto(S8)	Auto(S8)						
¥0700	Yes	Auto(S8)	Auto(S8)						
N	No	Auto(S8)	Auto(S8)						
¥0700	No	Auto(S8)	Auto(S8)						
N	No	Auto(AM-5	Auto(AM-5	TT Coupe c					
N	No	Auto(AM-5	Auto(AM-5	TT Coupe c					
N	No	Auto(AM-5	Auto(AM-5						
N	No	Manual(M	Manual(M						
N	No	Auto(S8)	Auto(S8)						

Model Year	EPA Calculated Gas	GEZ Rating	(GHG Rating)	#1 Smog R	#1 Mfr Sm	#1 EPA Sm	SmartWay
34.9		7	7 FVGAV02.0	9			
36.2		7	7 FVGAV02.0	9			
34.3		6	6 FVGAV02.0	9			
35.2		7	7 FVGAV02.0	9			
28.0		5	5 FVGAV04.0	5			
27.6		5	5 FVGAV04.0	5			
28.1		5	4 FVGAT03.0	5			
25.0		5	5 FVGAV04.0	5			
33.3		6	6 FVGAV02.0	5			
33.3		6	6 FVGAV02.0	5			
35.9		7	7 FVGAV02.0	9			
35.8		7	7 FVGAV02.0	9			
29.6		6	5 FVGAT03.0	5			

Signal 10 Pull #507 (for Test Group A) #3 Smog R #3 Mfr Sm #3 EPA Sm SmartWay #4 Smog R #4 Mfr Sm







City	State	Distance (miles)	Comb Vol Higher	Final Label	EPA_FUEL	EPA_GHG	EPA_AMT
N		3.7		3.7			
N		3.6		3.6			
N		3.8		3.8			
N		3.7		3.7			
N		4.5		4.5			
N		4.5		4.5			
N		4.5		4.5			
N		5.0		5.0			
N		3.8		3.8			
N		3.8		3.8			
N		3.6		3.6			
N		3.6		3.6			
N		4.3		4.3			



Label SubrGHG 1-10 rating on Ethanol (EPA Deter

Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr

mined)

**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Tue 3/4/2014 6:32:21 PM  
**Subject:** RE: 2015 FE Guide errors

Thanks, Dave, I have made the correction.

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Tuesday, March 04, 2014 1:01 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** 2015 FE Guide errors

Richard,

The Diesel Touareg had an error. See attached.

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Wednesday, February 26, 2014 1:30 PM  
**To:** Good, David  
**Subject:** RE: please call

Oh thanks Dave. It all looks good.

Richard

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Wednesday, February 26, 2014 12:44 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: please call

Richard,

Here you go,

[I had macro problems yesterday.]

Dave

**From:** Thomas, Richard (EEO) [<mailto:Richard.Thomas@vw.com>]  
**Sent:** Wednesday, February 26, 2014 10:12 AM  
**To:** Good, David  
**Subject:** please call  
**Importance:** High

Hi Dave;

I had to make changes to 2015 VGA index 007 and 006 and the annual fuel cost and 5 year savings values. If you ran that report yesterday could you see that the label audit is run again today to pick up these changes.

Thanks,

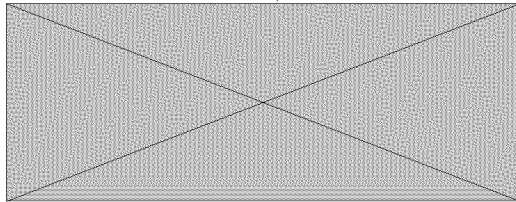
Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207

[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 3/4/2014 9:43:01 PM  
**Subject:** DAILY: Barra overseeing GM's handling of ignition switch recall | Jaguar plans compact sedan with new engine, aluminum unibody | Mustang rolls into Geneva with glow | Keith Crain named to Hall of Fame

March 4, 2014



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UPDATED: 3/4/14 4:07 pm ET - new story

9:16 am U.S. ET | Mar 4

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**Chevrolet Corvette recovery**

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- » **Some old problems haunt new GM**
- » **Jeep to unveil Italy-built**

## **Renegade subcompact SUV**

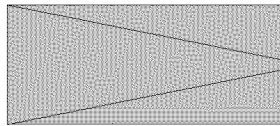
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» **Transit family will replace long-popular E-series vans**

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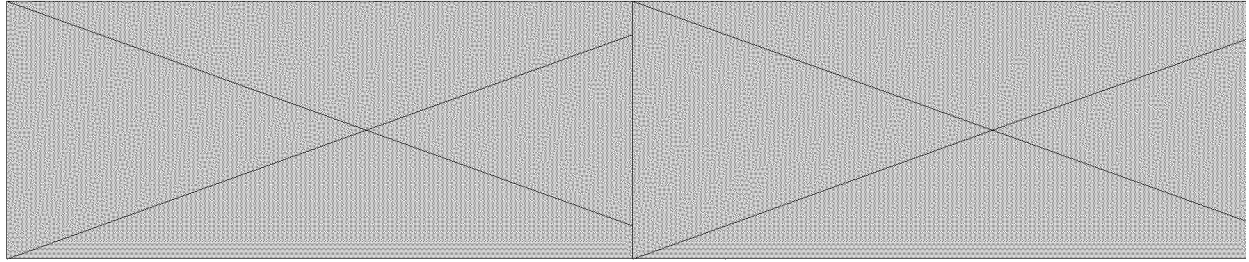
**Ford, GM, others monitor Russian dispute with Ukraine**

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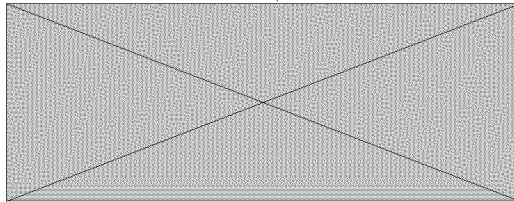
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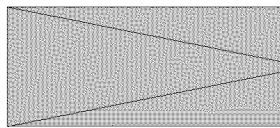
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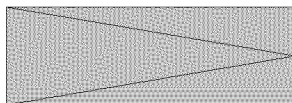
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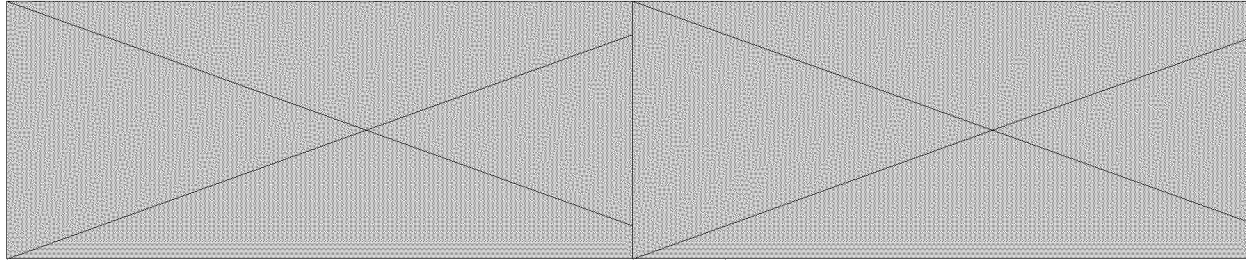
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DPF Delete Kit  
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Off-Road Exhaust

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2011-2014

6.6L DURAMAX LMM  
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• Cold Air Intake  
• Exhaust Systems



## Ford DPF Delete Kits | EGR Delete Kits | Cold Air Intakes & Filters | Off-Road Exhaust

### Ford Powerstroke DPF Delete Kits

Our delete kits come complete with your choice of a Spartan Phalanx Flash Console, Edge Ford Race Evolution or the SCT Livewire Extreme tuner and the DPF Delete pipe. Choose from the options below for the pipe kit that best suits your needs.

#### Related Products:

- Cold Air Intake
- Big-Rig Stacks

Product	Description	Cost
	Phalanx Flash Console up to 350RWHP Our 6.4 custom tuning is the market's ONLY available true custom tuning for the new Ford diesel engine, and delivers power and fuel efficiency absolutely unrivaled to any other. With tuning options available from 400RWHP to 250RWHP gains, no one else can match our ability to fit our tuning to your needs: power, economy, throttle response, shift quality...if you can name it, we can deliver.  <u>Choose Spartan Phalanx Flash Console</u>	From <b>\$1,499.99</b>
	SCT 2013-C Competition Vehicle Programmer 08-10 Powerstroke 6.4L The new SCT tuner for 6.4 applications. The SP3 Power Flash arrives Pre-Loaded with DYNO Proven tune files that INCREASE HORSEPOWER and TORQUE! Programming your vehicle with one of SCT's pre-loaded performance tune files	From <b>\$879.99</b>

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SAB 2008-09 Ford 6.4L  
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These cool air intake kits are all about increasing airflow to your truck's engine. More...

Aluminized Downpipe with  
DOC pipe kit 6.4L  
Powerstroke



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Save: 21% off

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Save: 19% off

**TPMS Tire Pressure/Temperature Monitor System [TPMS-1]**  
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Save: 9% off

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Save: 11% off

**Powerstroke Diesels [DFMAPSM]**  
~~\$39.00~~ \$31.20  
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**\$45.90**

**TurboXS ST108-TBE Catless Turbo-Back Exhaust ST108-TBE-RP, Subaru WRX / STI**  
**\$1,264.80**

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**TurboXS W08H-TBE Turbopack Exhaust**

**TurboXS W08H-TBE-TI Turbopack Exhaust**

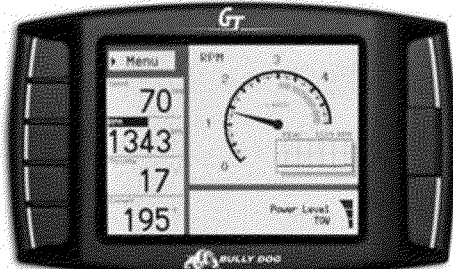
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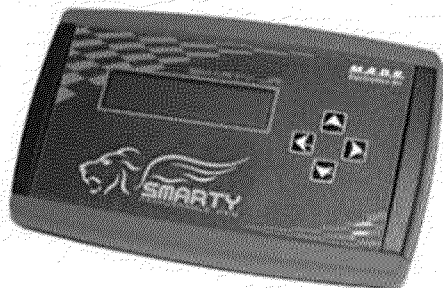
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Bully Dog is H&S!



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Smarty is RaceMe!

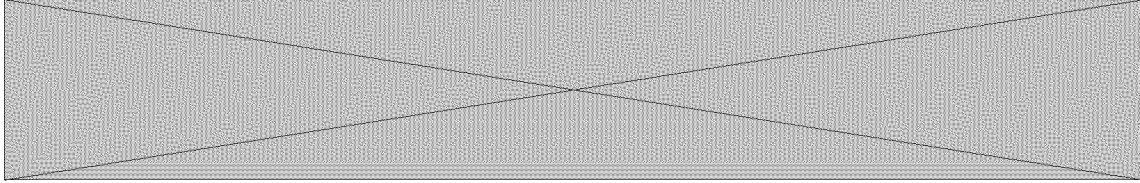


**From:** Kaul, Meetu  
**Required Attendees:** Alexander, David  
**Location:** My office  
**Importance:** Normal  
**Subject:** H&S/Defeat Device regroup  
**Start Date/Time:** Wed 3/12/2014 3:30:00 PM  
**End Date/Time:** Wed 3/12/2014 4:00:00 PM

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**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Thur 3/6/2014 5:04:18 PM  
**Subject:** Green Car Report Daily Headlines

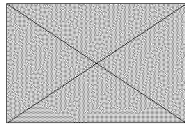
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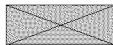
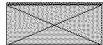
## 2014 Cadillac ELR Driven, 2015 Nissan Juke, Rinspeed XchangE: Today's Car News

Mar 06, 2014 04:55 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)

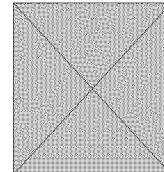
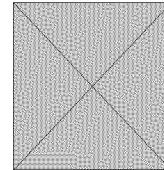


Today on Green Car Reports: The Tesla-based Rinspeed XchangE and 2015 Nissan Juke debut at the 2014 Geneva Motor Show, and we drive the 2014 Cadillac ELR electric-luxury coupe. All this and more on Green Car Reports. We've got live photos of the Tesla Model S-based Rinspeed XchangE autonomous car. The 2015 Nissan Juke is unveiled at the 2014...

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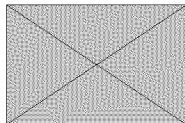


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## Replacing 2003 VW Jetta TDI: What Non-Gasoline Car Should He Pick?

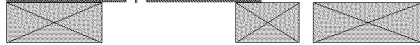
Mar 06, 2014 04:26 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



Everyone needs car-buying advice once in awhile—even the leader of an electric-car advocacy group. Richard Kelly—the president of Plug-In America—has now put almost 200,000 miles on his 2003 Volkswagen Jetta TDI. Maintenance costs for the compact diesel are going up, so he believes it's time to move on. In a blog post, Kelly

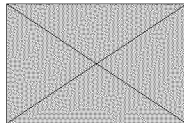
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## **2015 Nissan Juke Unveiled In Geneva: Live Photo Gallery**

**Mar 06, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)**



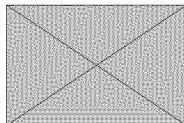
Nissan spent most of last week teasing images of the 2015 Juke in a frustrating social media campaign. All we really wanted to know was whether the Juke had lost its characterful—if divisive—styling. The good news (or bad news, depending on how much you like the Juke) is that it's lost none of its unique looks. If anything, the subtle tweaks...

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## **Rinspeed XchangE: Tesla-Based Autonomous Car Live Photos**

**Mar 06, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)**



One does not simply buy a Rinspeed car. They have no easily-accessible showrooms, and all of their vehicles are one-offs. Instead, they provide endless mirth at major auto shows like that ongoing in Geneva, with vehicles like the autonomously-driven XchangE. It is of course based on the Tesla Model S. Perhaps it's a sign that Tesla has made...

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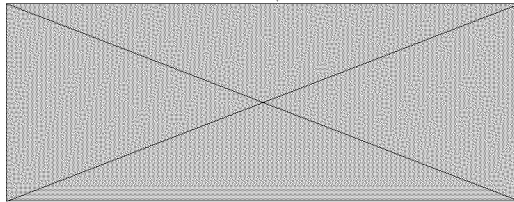
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March 6, 2014



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### GM assures analysts of pricing 'discipline' amid rising truck discounts

7:24 am U.S. ET | Mar 6

General Motors has been ratcheting up discounts on its full-size pickups over the last month, but it is telling Wall Street analysts that it intends to maintain premium pricing and margins on the trucks despite a drop in volume and market share. ... » [READ](#)

### Toyota's new subcompact will use Mazda's Skyactiv engine

11:08 am U.S. ET | Mar 6

Toyota will add Mazda's fuel-efficient Skyactiv engine to its tiny stable of borrowed powerplants when it sources a new Mazda2-based subcompact from Mazda's just-opened assembly plant here. ... » [READ](#)

### Jeep built in Italy will still appeal to U.S. buyers, brand boss says

7:06 am U.S. ET | Mar 6

Jeep's new Italy-built Renegade will be the brand's first model built exclusively outside of the United States, but this will not deter fans of the iconic American marque from buying the small SUV, Jeep boss Mike Manley said. ... » [READ](#)

### BMW details specifications for X4

## ahead of New York debut

3:13 pm U.S. ET | Mar 6

BMW has unveiled details and photos of its new X4 crossover with coupe styling. The vehicle is scheduled to make its world debut next month at the New York auto show, with production beginning this spring in South Carolina. ... » [READ](#)

## GM, Ford post double-digit gains in China

11:34 am U.S. ET | Mar 6

GM and Ford both reported double-digit sales gains in China for February -- GM jumped 20 percent and Ford rose 67 percent from a year earlier period. ... » [READ](#)

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3:38 pm U.S. ET | Mar 6

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12:45 pm U.S. ET | Mar 6

## Watch out, quick-lube shops, here comes VW

12:01 am U.S. ET | Mar 3



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» [April 7, 2014 - PACE Awards](#)  
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» [June 3, 2014 -](#)

## **Generators keep dealerships humming**

12:01 am U.S. ET | Mar 3

## **Back to Britain for ex-Volkswagen exec Browning**

12:01 am U.S. ET | Mar 3



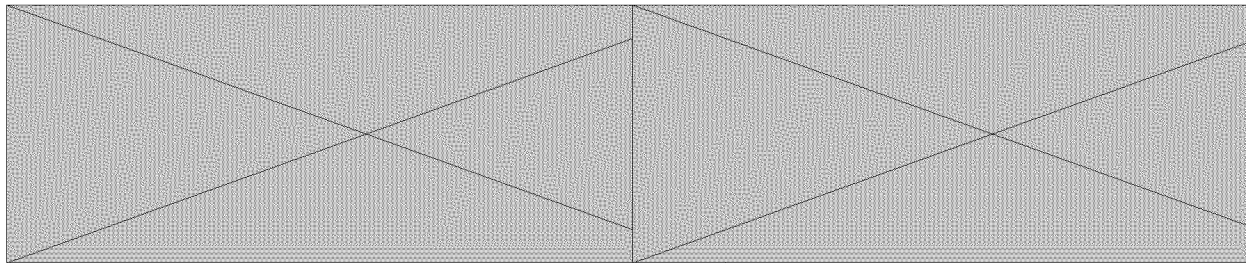
**Rising Stars**

**» June 4, 2014 - ANE**

**Congress**

**» Sept. 18 - NY**

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**Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207**

**To:** Wright, DavidA[Wright.DavidA@epa.gov]  
**Cc:** Snyder, Jim[Snyder.Jim@epa.gov]; Rodgers, William (EEO)[William.Rodgers@vw.com]; Allen, Gregory[Gregory.Allen@vw.com]; Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Giles, Michael (EEO)  
**Sent:** Fri 3/7/2014 1:45:05 PM  
**Subject:** VW Request - Cert Request Rejection [Ex. 4 - CBI]

Hello David,

This is a follow up to my voice message. We are requesting that you reject a recent certificate request we submitted for test group / evap family [Ex. 4 - CBI]. The certificate request was submitted on March 5<sup>TH</sup> under Manufacturer code VGA.

Once this is done, we will be able to make some corrections to related test data. Once the corrections are made we will re-submit the cert request.

Please let us know if you can help with this.

Regards,

Mike

Michael Giles

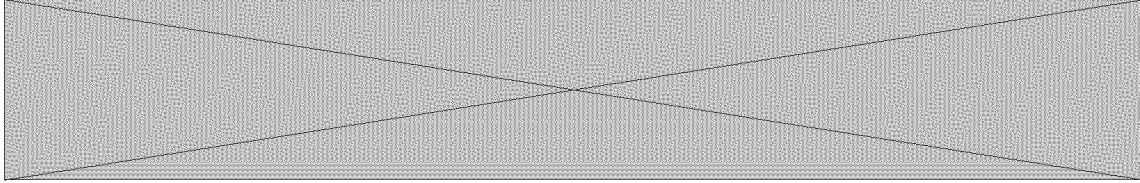
Certification Engineer – EEO

VW Group of America

(248) 754-4229

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Fri 3/7/2014 5:03:37 PM  
**Subject:** Green Car Report Daily Headlines

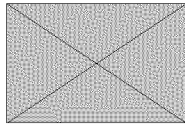
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The latest from your friends at GCR:

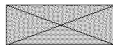
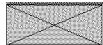
## Quant Limousine Concept Pioneers Flow Cell Power Unit At Geneva

Mar 07, 2014 02:43 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)

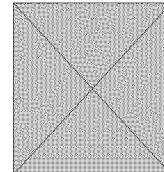
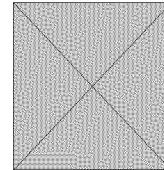


The change has been so gradual you'd hardly notice. Rather than huge multi-cylinder or turbocharged engines, the average wild concept car shown at the Geneva Motor Show is typically powered by fuel cells or batteries, these days. Making its debut at the show this year is La Vecchia's Quant e-Sportlimousine, whose power system is somewhere in...

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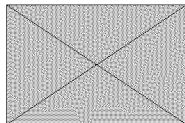


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## LA Apartment Building Offers Free Electric-Car Charging, For Life

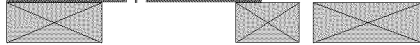
Mar 07, 2014 02:12 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



So you just bought a new electric car. Now all you need is a place to plug it in. If you live in Los Angeles, there's a new and potentially very attractive option: The Elysian rental apartment building will offer residents who own electric cars free charging--for life. The 96-unit building--owned by developer Linear City--is

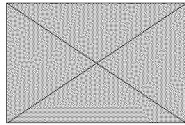
equipped with 20...

[comments](#) | [read more](#)



## 'New Fisker' Website Launches As Wanxiang Prepares To Restart Electric- Car Maker

Mar 07, 2014 01:48 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



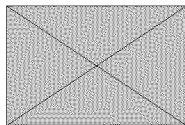
Fisker Automotive is slowly returning. A new website isn't the be-all and end-all of a company back on the right track, but the new site is the first sign of stirring life within the company under its new owner, Wanxiang America, the U.S. arm of China's largest auto-parts firm. It's also slick, hopeful, and remarkably candid about the company's...

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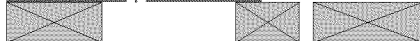
## 2014 BMW 2-Series Active Tourer: Live Photos From Geneva Show

Mar 07, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Let's get any confusion out of the way: The new BMW 2-Series Active Tourer is completely unrelated to the new BMW 2-Series. BMW has chosen the name to differentiate the new front-wheel drive hatchback from the 1-Series sold overseas, and partly, we suspect, because 1.5 or 2.5 Series would sound daft. But the car is a radical departure for a...

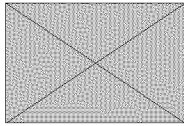
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## Volkswagen Golf GTE Plug-In Hybrid: Live Photos From Geneva

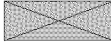
Mar 07, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)

(Antony Ingram)



Let's get the bad news out the way first:  
The Volkswagen Golf GTE won't be coming to the U.S. For whatever reason, VW has decided that American customers don't want a 200-horsepower plug-in hybrid Golf, with stylistic touches cribbed from the sporty GTI. Maybe it's not too bad—VW does after all sell gasoline and diesel Golfs, and is set to bring...

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**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Giles, Michael (EEO)  
**Sent:** Fri 3/7/2014 8:38:20 PM  
**Subject:** RE: VW Request - Cert Request Rejection

Ex. 4 - CBI

Thanks Jim – didn't realize you were back already.

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]  
**Sent:** Friday, March 07, 2014 3:33 PM  
**To:** Giles, Michael (EEO); Wright, DavidA  
**Cc:** Rodgers, William (EEO); Allen, Gregory; Thomas, Richard (EEO)  
**Subject:** RE: VW Request - Cert Request Rejection

Ex. 4 - CBI

Done.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Giles, Michael (EEO) [mailto:michael.giles@vw.com]  
**Sent:** Friday, March 07, 2014 8:45 AM  
**To:** Wright, DavidA  
**Cc:** Snyder, Jim; Rodgers, William (EEO); Allen, Gregory; Thomas, Richard (EEO)  
**Subject:** VW Request - Cert Request Rejection

Ex. 4 - CBI

Hello David,

This is a follow up to my voice message. We are requesting that you reject a recent certificate request we submitted for test group / evap family . The certificate request was submitted on March 5<sup>TH</sup> under Manufacturer code VGA.

Ex. 4 - CBI

Once this is done, we will be able to make some corrections to related test data. Once the corrections are made we will re-submit the cert request.

Please let us know if you can help with this.

Regards,

Mike

Michael Giles

Certification Engineer – EEO

VW Group of America

(248) 754-4229

**From:** Snyder, Jim  
**Location:** Online Meeting  
**Importance:** Normal  
**Subject:** New Time Proposed: Off-Cycle Credits  
**Start Date/Time:** Tue 3/11/2014 2:00:00 PM  
**End Date/Time:** Tue 3/11/2014 3:00:00 PM

**Ex. 7** We already have mtgs from 10 to 12 on Tuesday. Wed morning too but Thursday morning is open. Afternoons are available too if its just us but I assume there may be German call-ins?

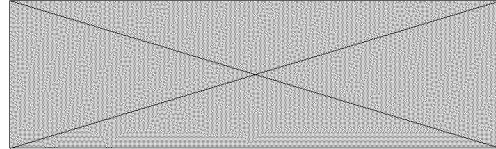
Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

-----  
New Meeting Time Proposed:  
Thursday, March 13, 2014 10:00 AM-11:00 AM (GMT-05:00) Eastern Time (US & Canada).

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Fri 3/7/2014 9:32:46 PM  
**Subject:** P.M. NEWSCAST: D.C.'s next auto agenda-setters | Benz global sales surge | 7-story Audi superstore

[Click here to open this newsletter in a Web browser](#)

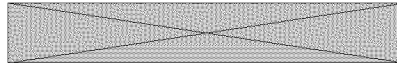
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**March 7, 2014**



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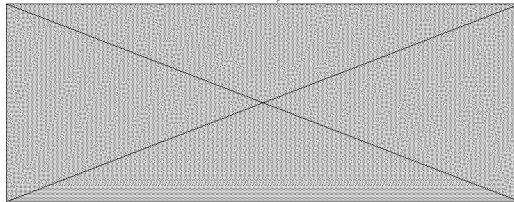
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..

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Fri 3/7/2014 9:37:24 PM  
**Subject:** DAILY: Ford to move medium-duty pickup line from Mexico to Ohio | Ford awards Mulally \$13.8M in stock | The race to sell a truck to Jimmy Fallon | Audi's superstore in Houston

March 7, 2014



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## TOP NEWS

### Ford to move medium-duty pickup line from Mexico to Ohio

7:34 am U.S. ET | Mar 7

Ford, which plans to cease making the Econoline van later this year, will revive the Ohio factory where the vehicle is made by investing \$168 million to move pickup production there from Mexico early in 2015. ...

[» READ](#)

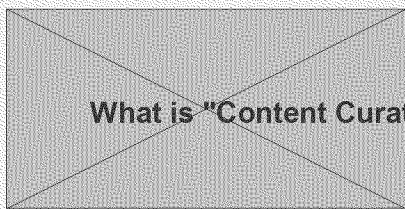
### Ford awards Mulally \$13.8 million in stock for 2013 performance

UPDATED: 3/6/14 7:45 pm ET

5:08 pm U.S. ET | Mar 6

Ford awarded CEO Alan Mulally \$13.8 million in stock for the automaker's performance last year when its profits grew in North America and sales picked up speed in China. ... [» READ](#)

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#### What is "Content Curation" Anyway?

Ninety percent of dealerships understand that content marketing is a priority, but almost half say it represents less than 10% of their marketing budget. IMN helps curate content like the big boys. [Curation vs. Plagiarism.](#)

## **Audi superstore opened by Sonic in Houston**

UPDATED: 3/7/14 2:59 pm ET - adds detail, photo  
10:04 am U.S. ET | Mar 7

A unit of Sonic Automotive has opened the largest Audi dealership in the United States -- a glitzy 142,000-square-foot store in Houston. ... » [READ](#)

## **Mazda snaps up engineers in latest sign of rebound**

1:44 pm U.S. ET | Mar 7

Mazda is embarking on a hiring binge in Japan, the latest sign that the former money-losing carmaker is bouncing back. The surge in new recruits will come in engineering as Mazda doubles down on future product. ... » [READ](#)

## **Income tax refunds, easy credit buoy used-vehicle prices**

3:16 pm U.S. ET | Mar 7

Used-vehicle prices, bolstered by consumers using their income tax refunds to buy used cars and trucks, rose 0.8 percent in February from January and 1.1 percent from February 2013, the Manheim Used Vehicle Value Index showed today. ... » [READ](#)

### **ON THE BLOGS**

[SEAN GAGNIER](#)

**The race to sell a truck to Jimmy Fallon**  
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[JIM HENRY](#)

**Why the CFPB is being accused of discrimination**  
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### **LATEST VIDEO**

**Mazda's O'Sullivan on new Mexico plant**  
» [WATCH THE VIDEO](#)

## **Fiat-Chrysler expects new plant to boost Brazil profitability**

4:18 am U.S. ET | Mar 7



» [3/20 - Is your website engaging?](#) by Dataium

**AutoNation aims to beef up service**

12:01 am U.S. ET | Mar 3

**Tavares hustles to make humbled PSA an auto champion**

3:23 am U.S. ET | Mar 7

**Acura task force targets 'wandering' image**

UPDATED: 3/3/14 12:16 pm ET - adds correction

12:01 am U.S. ET | Mar 3

**Fleet-only Chevy crossover finds takers on used lots**

12:01 am U.S. ET | Mar 3

**Fisker cleared to borrow \$4.98 million from Wanxiang**

2:49 pm U.S. ET | Mar 6

**Superior's Q4 profit rises to \$6.4 million despite lower sales**

UPDATED: 3/7/14 2:31 pm ET - adds details, correction, link

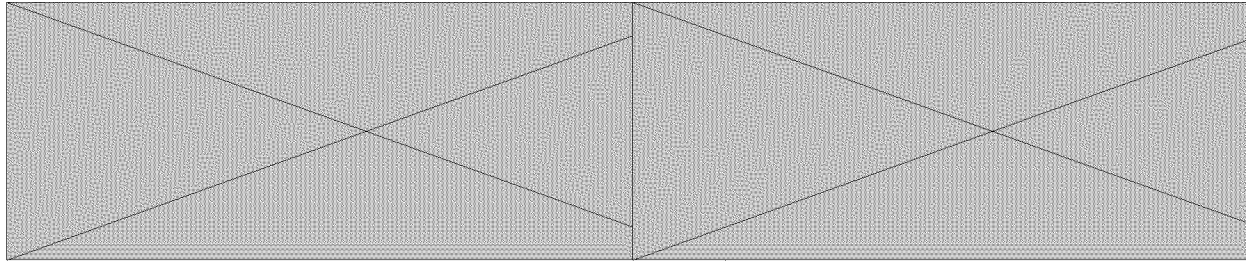
12:52 pm U.S. ET | Mar 7



» March 21, 2014 - Nominate Your Best Dealerships  
» April 7, 2014 - PACE Awards  
» May 14 - Marketing Seminar - Los Angeles  
» June 3, 2014 - Rising Stars  
» June 4, 2014 - ANE Congress  
» Sept. 18 - NY Marketing Seminar







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..

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Allen, Gregory[Gregory.Allen@vw.com]; Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Giles, Michael (EEO)  
**Sent:** Fri 3/7/2014 10:11:06 PM  
**Subject:** RE: VW Request - Cert Request Rejection FVGAV06.3VUM / FVGAR0155VAM

Thanks Jim,

We have made the test data corrections.

I re-submitted the certificate request, so it should be back in your work flow.

Regards,

Mike

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]  
**Sent:** Friday, March 07, 2014 3:33 PM  
**To:** Giles, Michael (EEO); Wright, DavidA  
**Cc:** Rodgers, William (EEO); Allen, Gregory; Thomas, Richard (EEO)  
**Subject:** RE: VW Request - Cert Request Rejection FVGAV06.3VUM / FVGAR0155VAM

Done.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** Giles, Michael (EEO) [<mailto:michael.giles@vw.com>]  
**Sent:** Friday, March 07, 2014 8:45 AM  
**To:** Wright, DavidA  
**Cc:** Snyder, Jim; Rodgers, William (EEO); Allen, Gregory; Thomas, Richard (EEO)  
**Subject:** VW Request - Cert Request Rejection FVGAV06.3VUM / FVGAR0155VAM

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Please let us know if you can help with this.

Regards,

Mike

Michael Giles

Certification Engineer – EEO

VW Group of America

(248) 754-4229

**From:** Werner, Jacqueline  
**Required Attendees:** Miller, Anthony; Klepp, Robert; Brooks, Phillip; Wick, Anne;  
Adair, Jocelyn; Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
**Subject:** Defeat Device Penalty Policy  
**Start Date/Time:** Thur 3/13/2014 5:00:00 PM  
**End Date/Time:** Thur 3/13/2014 6:00:00 PM

**From:** Werner, Jacqueline  
**Required Attendees:** Miller, Anthony; Klepp, Robert; Brooks, Phillip; Wick, Anne;  
Adair, Jocelyn; Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
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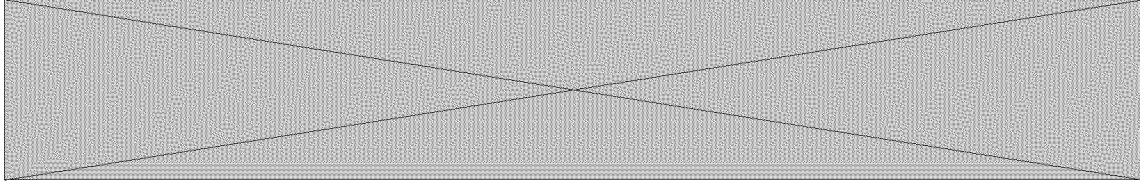
**From:** Werner, Jacqueline  
**Required Attendees:** Miller, Anthony; Klepp, Robert; Brooks, Phillip; Wick, Anne;  
Adair, Jocelyn; Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
**Subject:** Defeat Device Penalty Policy  
**Start Date/Time:** Thur 3/13/2014 5:00:00 PM  
**End Date/Time:** Thur 3/13/2014 6:00:00 PM

**From:** Kaul, Meetu  
**Location:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE  
**Importance:** Normal  
**Subject:** Tentative: Defeat Device Penalty Policy  
**Start Date/Time:** Thur 3/13/2014 5:00:00 PM  
**End Date/Time:** Thur 3/13/2014 6:00:00 PM



**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Mon 3/10/2014 5:03:08 PM  
**Subject:** Green Car Report Daily Headlines

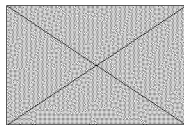
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The latest from your friends at GCR:

## A Year With Tesla, Honda Hybrids, Electric School Bus: Today's Car News

Mar 10, 2014 03:06 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



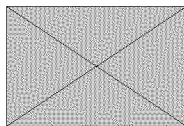
Today on Green Car Reports: Honda plans bigger hybrids now that the Insight is gone, the U.S. gets its first electric school bus, and five green cars we can't wait to drive. All this and more on Green Car Reports. California launches the country's first all-electric school bus. What's the verdict after one year and 15,000 miles with a Tesla Model...

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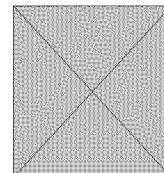
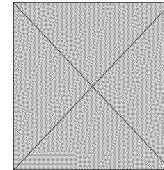
## 'Quietest, Slowest' Comparison Ever: 6 Electric Cars Tested By Car And Driver

Mar 10, 2014 02:27 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



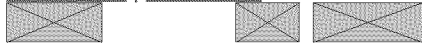
Oh, to have the resources available to Car and Driver, which published in its March issue a lengthy comparison test among six battery-electric cars. They are the Chevrolet Spark EV, Fiat 500e, Ford Focus Electric, Honda Fit EV, Nissan Leaf, and Smart Electric Drive

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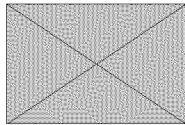
Cabrio. MORE: Electric Cars' Secret Advantage: They're Just Nicer To Drive The tone...

[comments](#) | [read more](#)



## Audi's Traffic Light Recognition Tech Will Save You Gas, Time

Mar 10, 2014 02:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



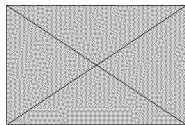
Taking the average passenger car and making it more efficient is the combination of dozens of factors from engine technology to aerodynamics to more extreme measures like hybridization. But some factors you just can't control, like traffic, weather and the changing of traffic signals. ALSO SEE: Is Walmart's WAVE Concept Truck The Fuel-Efficient...

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## Five Green Cars We Can't Wait To Drive

Mar 10, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



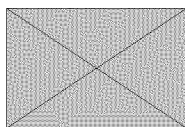
The green car scene has never had more variety than it does today. You could, if you wanted to, walk into a dealership today and buy regular gasoline and diesel cars, natural gas vehicles, hybrids, plug-in hybrids, electric vehicles and soon, hydrogen cars. And there are plenty more on the horizon. So this is our run-down of the five green...

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## Honda: Hybrids For Bigger Cars Now That Insight Is Going Away

Mar 10, 2014 12:57 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



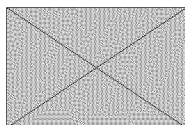
Scrambling to do a bit of damage control after news broke last month that production of its Insight hybrid will end this year, Honda issued a press release touting its renewed commitment to hybrid technology. The death of the Insight model begged the question, what about the tiny two-seat CR-Z hybrid hatchback? And, for that matter, what about the...

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## Small, Obscure, Green Cars At The 2014 Geneva Motor Show

Mar 10, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



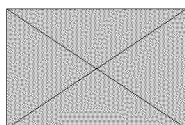
Major manufacturer launches are only one part of the annual Geneva Motor Show. Tear yourself away from the glitzy stands and the smiling girls who recline against the newest launches, and a host of smaller companies showing eco-friendly concepts is always present. This year, several companies stole the limelight from their large OEM counterparts...

[comments](#) | [read more](#)



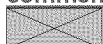
## Life With Tesla Model S: One Year And 15,000 Miles Later

Mar 10, 2014 11:49 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(David Noland)



Well, it's now been a year since I took delivery of my dark green 2013 Tesla Model S with the 60-kilowatt-hour battery. After almost four years of waiting, those first days after delivery were euphoric. As I recall, the words "greatest freaking car in the entire freaking Universe" (or thereabouts) passed my lips on several occasions during the...

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**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** [Ex. 7]@vw.com]  
**From:** [Ex. 7]  
**Sent:** Mon 3/10/2014 7:00:01 PM  
**Subject:** RE: Off-Cycle Credits

Hello Jim:

Thanks for the response. Unfortunately, Thursday morning (03/13/14) doesn't work for us. Since this call does not involve our German colleagues, afternoons are okay. Would a call on Wednesday (03/12/14) after 3:00 p.m. or Thursday (03/13/14) after 2:00 p.m. work?

Best regards,

[Ex. 7]

---

**Ex. 7**

Engineering and Environmental Office  
Volkswagen Group of America, Inc.

Phone: [Ex. 7]

Cell: [Ex. 7]

E-Mail: [Ex. 7]

-----Original Appointment-----

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]

**Sent:** Friday, March 07, 2014 4:01 PM

**To:** [Ex. 7]

**Subject:** New Time Proposed: Off-Cycle Credits

**When:** Tuesday, March 11, 2014 10:00 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).

**Where:** Online Meeting

[Ex. 7] We already have mtgs from 10 to 12 on Tuesday. Wed morning too but Thursday morning is open. Afternoons are available too if its just us but I assume there may be German call-ins?

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

-----

New Meeting Time Proposed:

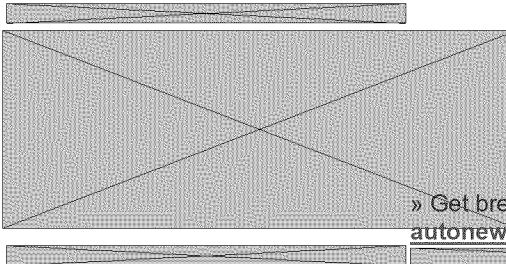
Thursday, March 13, 2014 10:00 AM-11:00 AM (GMT-05:00) Eastern Time (US & Canada).

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 3/10/2014 8:40:30 PM  
**Subject:** DAILY: GM picks former Lehman investigator Valukas to lead recall probe | Japanese automakers march into Mexico, set up export base | Remembering William Clay Ford Sr., 1925-2014

Today's most read story

**GM's recall and the watchdog that didn't bark**

March 10, 2014



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## TOP NEWS

### **GM picks former Lehman investigator Valukas to lead recall probe**

11:54 am U.S. ET | Mar 10

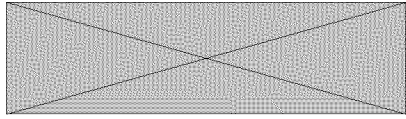
General Motors has hired Jenner & Block Chairman Anton Valukas, who served as a federal Justice Department-appointed examiner of the downfall of Lehman Brothers Holdings, to help lead an internal probe of the handling of an ignition-switch failure tied to at least 13 deaths. ... » [READ](#)

### **Japanese automakers march into Mexico, set up export base**

12:01 am U.S. ET | Mar 10

When three-tiered car haulers packed with Mazda3s pulled out of the dusty rail yard in Mexico last month, they represented the latest volley in a south-of-the-border blitz by Japanese automakers. ... » [READ](#)

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25% of the customers in your database no longer own the vehicle you think they do. Are you targeting the *right* customers? **Unlock Your Profit Potential**

## **American Honda splits marketing and sales operation by brand**

2:00 pm U.S. ET | Mar 10

American Honda has reassigned marketing boss Mike Accavitti to lead the Acura brand amid a restructuring of the automaker's North American operation that will group marketing and sales functions under separate divisions for the Honda and Acura brands. ... » [READ](#)

## **William Clay Ford Sr. remembered for 57-year legacy at Ford Motor**

UPDATED: 3/10/14 3:14 pm ET - adds details

12:01 am U.S. ET | Mar 10

William Clay Ford Sr., who took driving lessons at age 10 from his grandfather Henry Ford and once flew with legendary aviator Charles Lindbergh, is being remembered for helping steer Ford Motor Co. for more than 57 years. He died Sunday at age 88. ... » [READ](#)

## **Chevy distances itself from viral dying-dog spot**

3:52 pm U.S. ET | Mar 10

Chevrolet is being lauded -- and ripped -- for an emotional new TV spot for the Equinox showing a woman saying goodbye to her pooch "Maddie" before the dying dog is euthanized. But the spot wasn't created by an ad agency. And Chevy has never actually aired the 60-second spot, said spokeswoman Cristi Vazquez. ... » [READ](#)

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**Attention all hipsters: Audi wants to sell you a car**

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**Chrysler says it will keep minivan production in Canada**

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**GM assures analysts of pricing 'discipline' amid rising truck discounts**

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**Subaru hints at plug-in hybrid diesel crossover with Viziv 2 concept**

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**Toyota chairman says hybrids will soon have 20% global share**

12:15 am U.S. ET | Mar 10

**Mazda's challenges in crucial Mexico plant ramp-up**

12:01 am U.S. ET | Mar 10

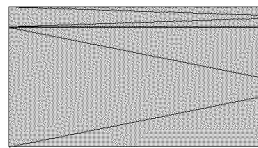
**Rise of the Mexican auto industry**

12:01 am U.S. ET | Mar 10

**Tesla, Apple supplier Amtek bets auto industry will fuel its growth**

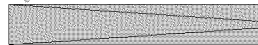
## MULTIMEDIA

**» Inside Mazda's Salamanca factory ...**



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**» March 21, 2014 - Nominate Your Best Dealerships**

**» April 7, 2014 - PACE Awards**

**» May 14 - Marketing Seminar - Los Angeles**

**» June 3, 2014 - Rising Stars**

9:30 am U.S. ET | Mar 10

**Chrysler recalls 25,250 SUVs  
for braking issue**

9:22 am U.S. ET | Mar 10

**Marchionne awarded \$307,989  
as Chrysler CEO in 2013**

5:47 pm U.S. ET | Mar 7

**Cars.com's owners  
considering sale of Web site  
business, report says**

7:09 am U.S. ET | Mar 10

**Lexus, Subaru rank high for  
responding to internet leads**

12:01 am U.S. ET | Mar 10

**Ford's Detroit Lions didn't  
match automaker's  
turnaround**

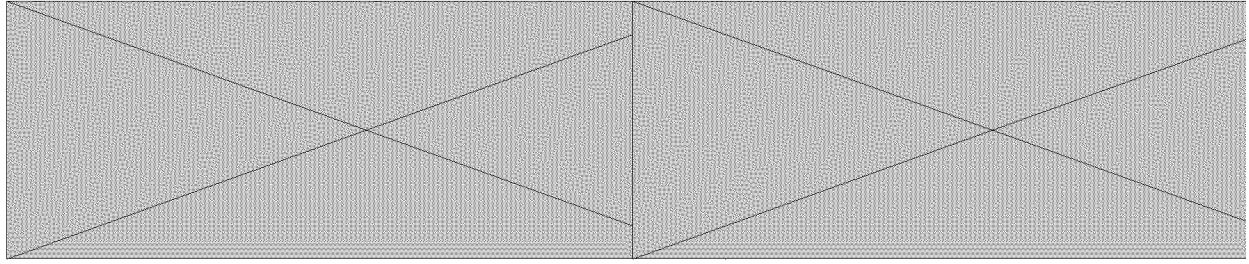
UPDATED: 3/10/14 12:41 pm ET - adds  
detail

2:20 pm U.S. ET | Mar 9

**Reactions to the death of  
William Clay Ford Sr.**

10:55 am U.S. ET | Mar 10

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**Required Attendees:** Alexander, David  
**Location:** My office  
**Importance:** Normal  
**Subject:** H&S/Defeat Device regroup  
**Start Date/Time:** Wed 3/12/2014 3:30:00 PM  
**End Date/Time:** Wed 3/12/2014 4:00:00 PM

When: Wednesday, March 12, 2014 11:30 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).

Where: My office


Note: The GMT offset above does not reflect daylight saving time adjustments.

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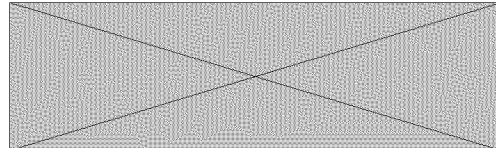
**Ex. 5, 7**

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 3/11/2014 7:28:10 PM  
**Subject:** P.M. NEWSCAST: Rustling up relief for weary Wrangler, Cherokee workers | Audi slips past BMW | GM to face Senators? | Volvo tests road magnets

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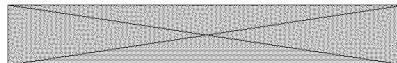
**March 11, 2014**



**[Part-time help at Jeep »](#)**

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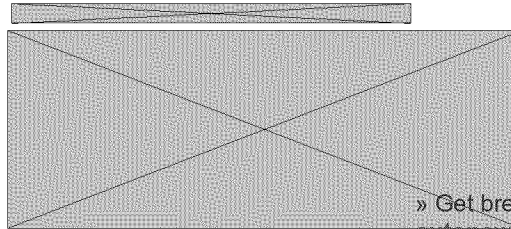
..

**To:** Wehrly, Linc[wehrly.linc@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 3/11/2014 8:32:33 PM  
**Subject:** DAILY: Justice Dept. joins probes into GM recall | New Jersey, in blow to Tesla, moves to ban direct sales | Chrysler hiring in Toledo | The Japan quake: 3 years later

Today's most read story

**GM's recall and the watchdog that didn't bark**

March 11, 2014



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## TOP NEWS

### **Justice Dept. exploring GM's handling of fatal switch recall**

UPDATED: 3/11/14 4:08 pm ET

3:42 pm U.S. ET | Mar 11

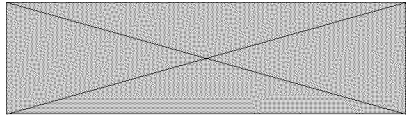
The Justice Department started a preliminary investigation into how GM handled the recall of 1.6 million vehicles with faulty ignition switches linked to at least 13 deaths. ... » [READ](#)

### **Valukas, no stranger to GM probes, faces 'witch hunt' on tight deadline**

7:01 am U.S. ET | Mar 11

In leading an internal investigation into ignition-switch design flaws tied to at least 13 deaths, it will take some hasty archeology on the part of the Chicago lawyer hired to dig through layers of GM history that have accumulated over the past decade. ... » [READ](#)

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## [Tesla may be forced to shut N.J. stores after state commission vote](#)

UPDATED: 3/11/14 3:40 pm ET -- new story, adds vote  
12:22 pm U.S. ET | Mar 11

Tesla Motors may be forced to close its stores in New Jersey after a state commission voted to bar automakers from selling directly to customers. ...

[» READ](#)

## [Chrysler to add as many as 1,000 part-time workers at Toledo Jeep complex](#)

12:25 pm U.S. ET | Mar 11

Chrysler Group plans to hire as many as 1,000 part-time workers at its Toledo Jeep complex to relieve the schedules of full-time employees amid strong demand for the Wrangler and new Cherokee. ... [» READ](#)

## [3 years later, rebounding from quake, tsunami](#)

12:01 am U.S. ET | Mar 11

On March 11, 2011, a massive earthquake-tsunami devastated Japan and also torpedoed much of the nation's auto industry for the better part of a year. But as Japan marks the three-year anniversary, the country's carmakers have rebounded to precrisis highs. Last year, Japan churned out 9. ... [» READ](#)

## [NTSB chief, frequent critic of automakers, to step down](#)

1:28 pm U.S. ET | Mar 11

Deborah Hersman, the public face of the National Transportation Safety Board and a frequent critic of the auto industry, is stepping down to head a safety-advocacy group. ... [» READ](#)

### [ON THE BLOGS](#)

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[Extended service contract? Skip it, Consumer Reports tells readers](#)

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**GM's recall and the watchdog that didn't bark**

**Toyota's new subcompact will use Mazda's Skyactiv engine**

**GM assures analysts of pricing 'discipline' amid rising truck discounts**

**Subaru hints at plug-in hybrid diesel crossover with Viziv 2 concept**

**Ford to move medium-duty truck line from Mexico to Ohio**

**Viral video rankings for week of 3/11/2014**

**Apple makes waves, Caddy causes controversy**

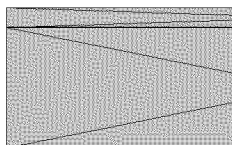
12:01 am U.S. ET | Mar 11

This week's hottest new auto brand viral video to make our list is ... an Apple product? ... [» Watch the videos](#)

**Marchionne's pay as Fiat CEO falls to \$5 million in 2013**

2:46 pm U.S. ET | Mar 11

**Audi, starting with A3, aims to update in-car software faster**



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by Dataium

[» March 21, 2014 -](#)

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5:32 pm U.S. ET | Mar 10

**Anti-union workers win voice in UAW fight at VW's Tenn. plant**

3:26 pm U.S. ET | Mar 11

**Audi to introduce 17 new, revamped models this year**

6:26 am U.S. ET | Mar 11

**Canada to phase out tariffs on Korean vehicles under trade pact**

UPDATED: 3/11/14 12:57 pm ET

2:04 am U.S. ET | Mar 11

**Kia to start building Soul EV next month for 2016 launch**

7:30 am U.S. ET | Mar 11

**Audi passes BMW in global sales to take lead in luxury race**

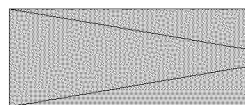
7:49 am U.S. ET | Mar 11

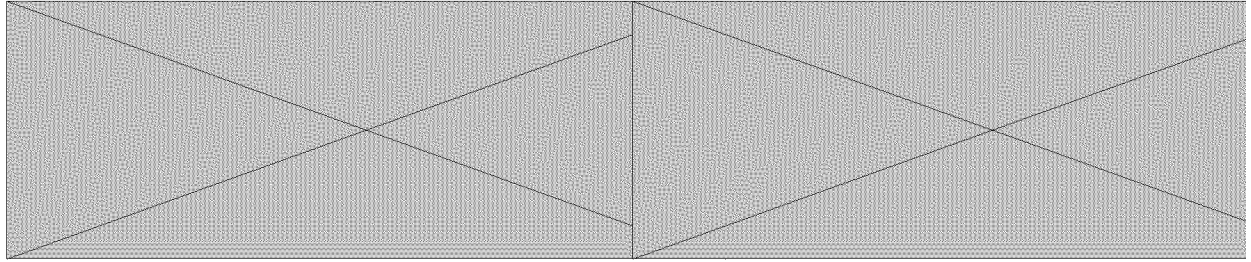
**Former Ford purchasing boss Tony Brown named to Tower International board**

1:46 pm U.S. ET | Mar 11

**Germany's famed Nuerburgring race track sold to auto parts maker**

2:34 pm U.S. ET | Mar 11





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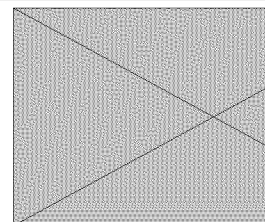
..

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** WardsAuto OEM Edition  
**Sent:** Wed 3/12/2014 8:00:28 AM  
**Subject:** Audi RS 7 4.0L Turbo V-8 Busts Out of Corral

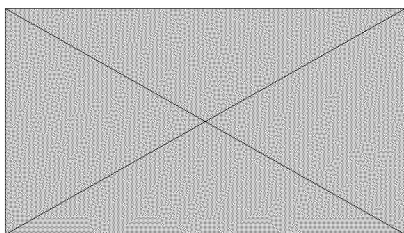
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# WardsAuto OEM Edition

March 12, 2014



## Big SUVs Staging Modest Comeback



Like the vehicles themselves, five major automakers find the large/luxury utility segment impossible to ignore.

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This white paper details how to anticipate and mitigate the risks of potential supply chain disruptions. Using five out-of-the-ordinary scenarios, it describes what can be done to prepare for disruptions and how to mitigate their effects after the event.

## Gallery: Like It or Not, Big SUVs Here to Stay

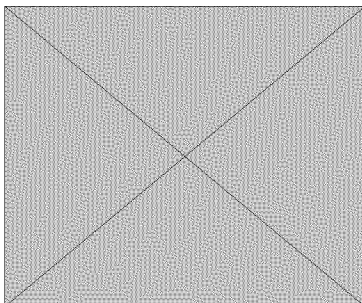
Hummer is gone, but six automakers make 14 models for Large/Luxury SUV segment.

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Bringing new vehicles to market has never been more challenging. Not only are new vehicles more complex than ever before, but supply chains are stretched, consumers are more demanding and even small delays can cost

## Ford to Shift Medium-Duty Truck



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## Production From Mexico to Ohio

Ford is investing \$168 million to retool its Avon Lake plant, which currently produces the E-Series van and other commercial vehicles.

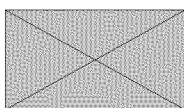
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**The race to 54.5 mpg by 2025 is on.**

ArcelorMittal's commercially available advanced steel grades, coupled with emerging and longer-term breakthrough steels, provide Body-in-White weight reduction solutions that will help automakers achieve 54.5 mpg by 2025, at a lower cost – and with lower total life cycle CO2 emissions – than competing materials. [Click Here](#)

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## **Chrysler to Build Next-Gen Minivan in Canada**

Chrysler says its capital allocation decisions will be continuously monitored to ensure the competitiveness of Canada as a global manufacturer.

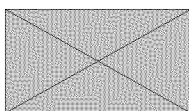
[FULL ARTICLE](#)

## **Whither Compact Cars?**

While compact-car sales have slumped for six straight months, demand for compact CUVs has skyrocketed.

[FULL ARTICLE](#)

## **Test Drive: Audi RS 7 4.0L Turbo V-8 Busts Out of Corral**



This bucking bronco requires a steady hand on the reins, because he will run hard – well past the stated 174 mph top speed, according to some independent tests. From a standstill, the RS 7 can giddyup to 60 mph in 3.7 seconds, or less.

[FULL ARTICLE](#)

## **Gallery: '14 Audi RS 7**

Audi RS 7 arrives with sleek styling and a 560-hp twin-turbo 4.0L V-8. It poses threat to BMW M6 Gran coupe and Mercedes CLS63 AMG.

## **Canada Sees Record February Lt. Truck Sales**

Record light-truck sales buoyed Canadian market to fourth-best level in February.

[FULL ARTICLE](#)

## **Experts See Autonomous-Car Revolution as Evolution**

Whereas the pioneering driver-assistance technologies such as lane-keeping mainly offer safety benefits, systems now under development also feature more comfort for drivers.

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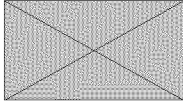
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## **VideoWire**



New Mexico Lobbies for Tesla Plant; BMW Says i8 Hybrid Sold Out

## **European Connected-Car Tech Standards Taking Shape**

Lawmakers in Brussels hope to see connected cars on European Union roads as soon as 2015. Authorities in Austria, Germany and the Netherlands already have agreed to cooperate on installing roadside communication infrastructure.

[FULL ARTICLE](#)

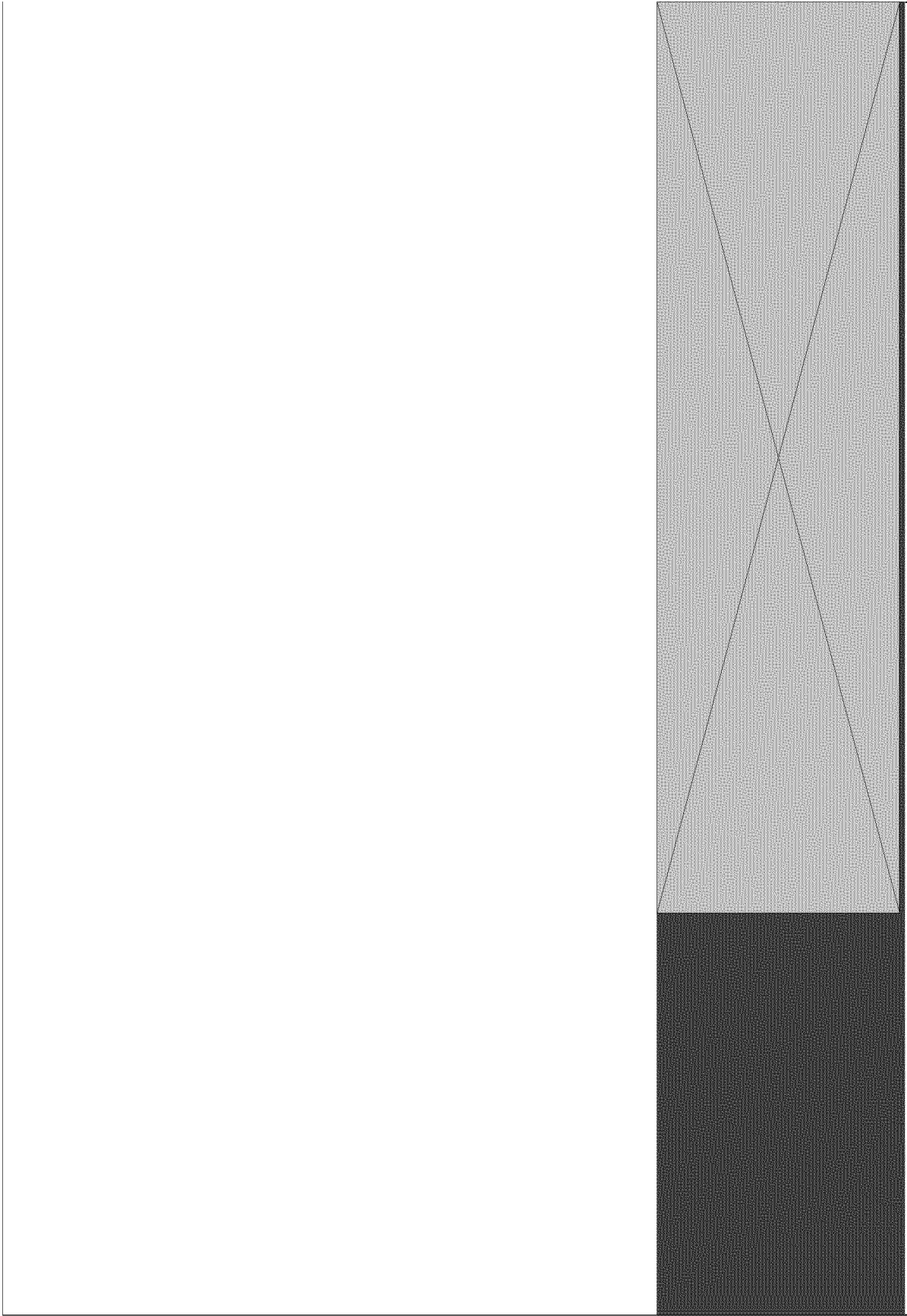
## **Volvo Drive-E Strategy Drives Forward**

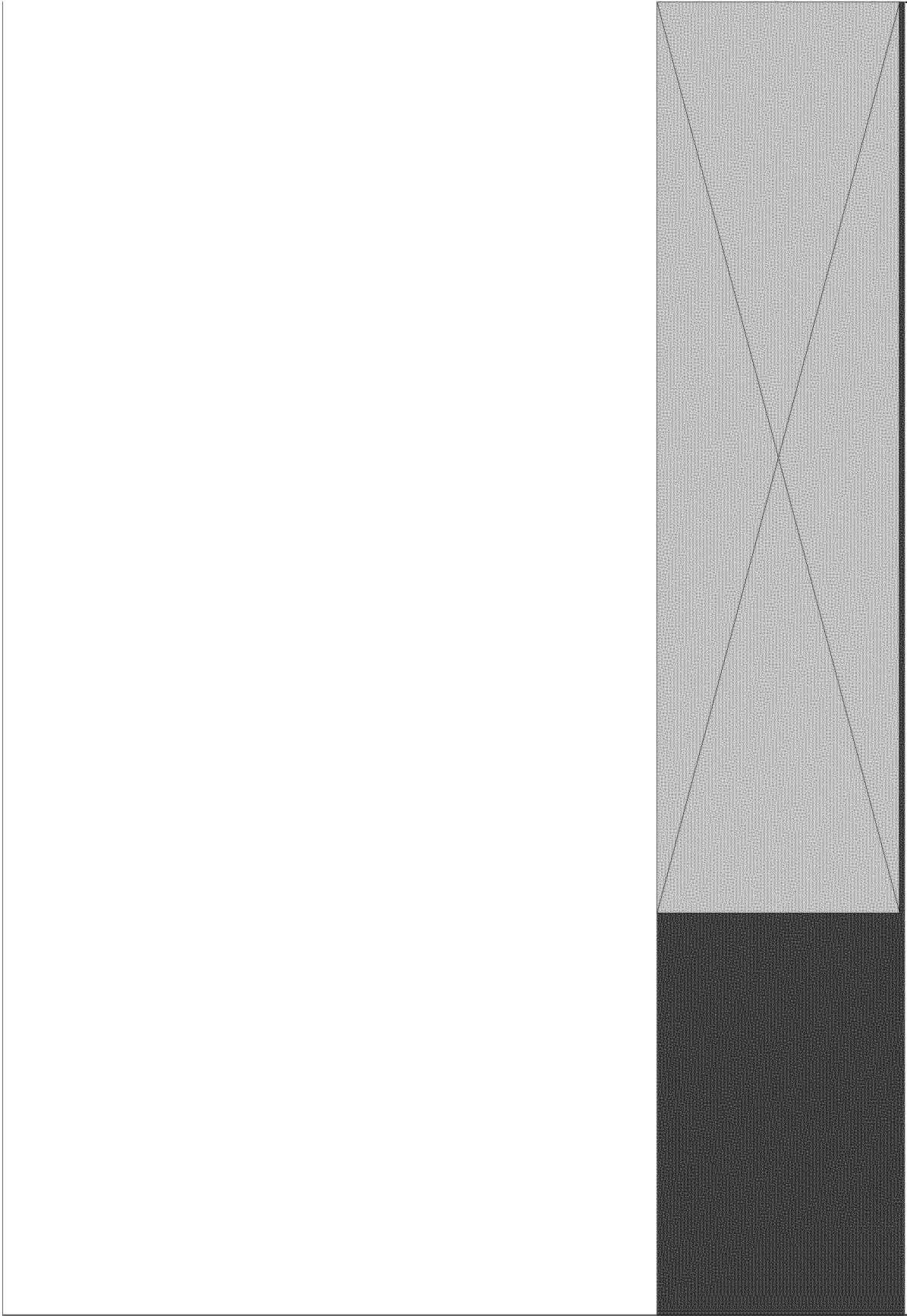
The Swedish automaker wanted to develop its own engines but had to wait until the 2010 sale to Geely was complete. Today, the Drive-E launch of two new gasoline engines for the U.S. is under way.

[FULL ARTICLE](#)

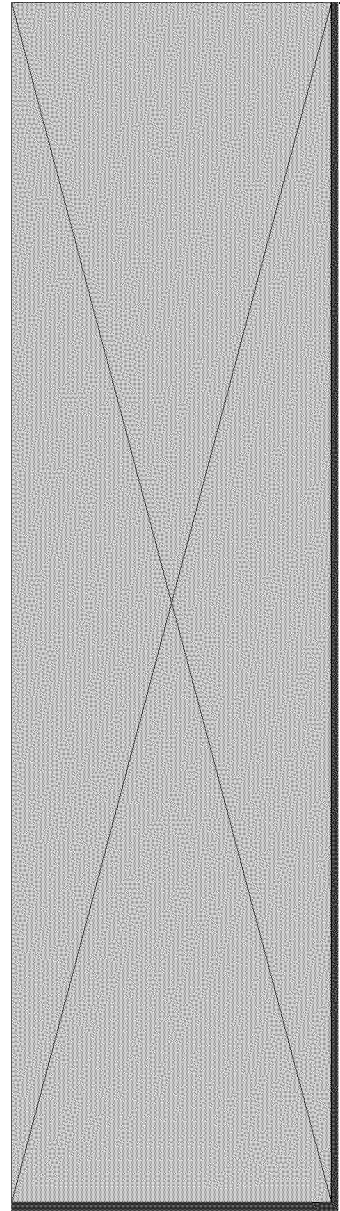
## **Gallery: Volvo China Test Drive**

Some 150 Chinese journalists experienced Volvo Car's newest Drive-E engines during a special presentation and test drive staged this month in Shanghai.





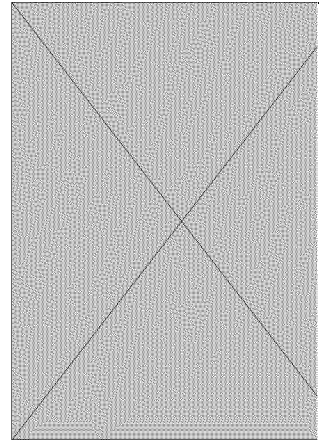




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## **WHITEPAPER**

This white paper details how to anticipate and mitigate the risks of potential supply chain disruptions. Using five out-of-the-ordinary scenarios, it describes what can be done to prepare for disruptions and how to mitigate their effects after

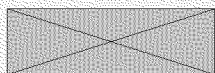


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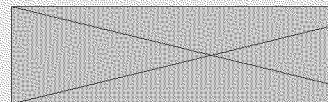
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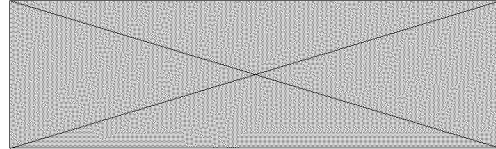
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**From:** Automotive News  
**Sent:** Wed 3/12/2014 8:04:03 PM  
**Subject:** P.M. NEWSCAST: GM offers \$500 discount, loaners to owners of recalled cars | A win for UAW opponents at VW | Threat to Canada's car industry? | Toyota hikes wages

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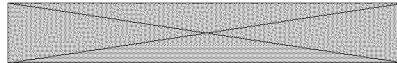
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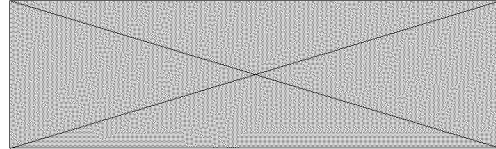
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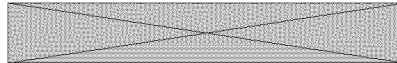
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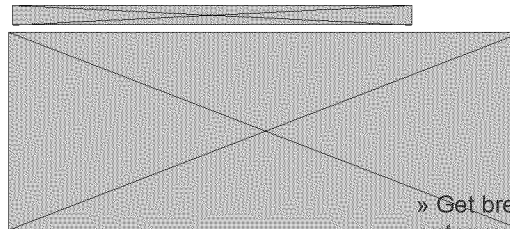
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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Wed 3/12/2014 8:47:27 PM  
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### **GM recall may have begun sooner with more data, NHTSA head says**

2:52 pm U.S. ET | Mar 12

Federal auto-safety regulators didn't force General Motors to recall 1.6 million cars sooner because the connection between defective ignition switches and failing air bags wasn't clear, the head of the National

Highway Traffic Safety Administration said. ... » [READ](#)

### **Cars.com drawing interest from AutoTrader owners Cox, Apax, report says**

7:36 am U.S. ET | Mar 12

Cox Enterprises, the media holding company, and buyout firm Apax Partners LLP -- the owners of AutoTrader -- are interested in bidding for auto-sales Web site Cars.com, people with knowledge of the matter told Bloomberg. ... » [READ](#)

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## Tesla hires Renault-Nissan chief spokesman Sproule in global push

1:55 pm U.S. ET | Mar 12

Tesla Motors, preparing to sell electric cars to China as it fights car dealers in the United States, is hiring a veteran of Carlos Ghosn's Renault-Nissan alliance to manage its marketing and message. ... » [READ](#)

## GM offers \$500 discount, free loaners to owners of recalled cars

UPDATED: 3/12/14 3:13 pm ET - adds GM response to Ditlow

1:10 pm U.S. ET | Mar 12

General Motors is offering the 1.37 million owners of cars recalled in the United States for a faulty ignition switch a \$500 cash allowance toward the purchase or lease of a new car, and is advising dealers to offer loaners to concerned customers. ... » [READ](#)

## UAW slams decision giving anti-union workers voice in VW dispute

3:58 pm U.S. ET | Mar 12

The UAW sharply criticized and vowed to appeal a federal agency's decision to let anti-UAW Volkswagen workers defend the results of an election that the union lost last month at a Tennessee VW plant. ... » [READ](#)

## BEST PRACTICES

### Loyalty builder: Dealer calls buyers after a sale

12:01 am U.S. ET | Mar 10

Jewel Lee Kenley, who runs Ed Kenley Ford near Salt Lake City, calls at least 50 to 60 customers most months; in a good year, she has called as many as 1,000. ... » [READ](#)

## **DEALER BEST PRACTICES TIPS**

Sell out of the service drive

Mike Shaw Toyota-Scion in Corpus Christi, Texas, employs a full-time salesperson who sits in the service department and offers a free, no-strings market appraisal when customers pull in for an oil change or repair. ...

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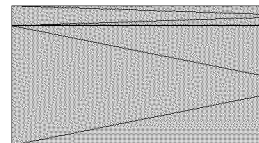
[Toyota raises Japanese workers' base wages for first time since 2008](#)

6:32 am U.S. ET | Mar 12

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12:01 am U.S. ET | Mar 10

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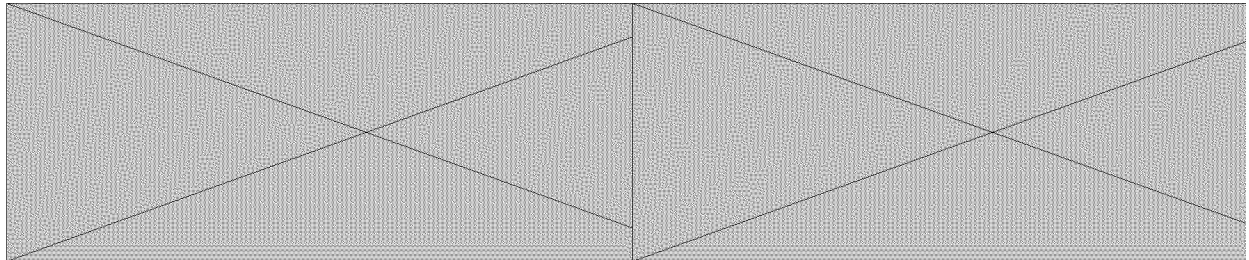
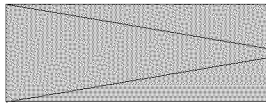
11:00 am U.S. ET | Mar 12

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**BMW, M-B reduce number of  
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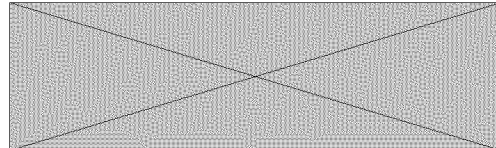
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**From:** Automotive News  
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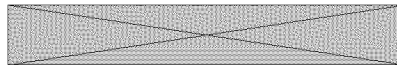
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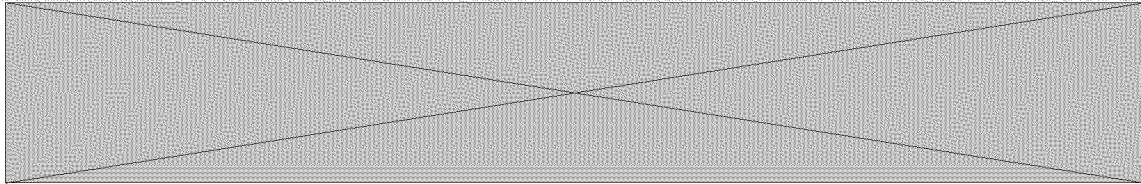
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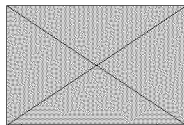
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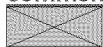
## VW Lithium-Air Battery, Audi Plug-Ins, Mass Transit Popularity: Today's Car News

Mar 13, 2014 03:31 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



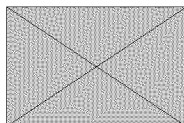
Today on Green Car Reports: Volkswagen promises more-efficient lithium-air batteries, Audi plans more plug-in hybrids, and mass-transit usage grows. All this and more on Green Car Reports. Volkswagen says it can triple battery capacity with lithium-air technology. Audi will build plug-in hybrid models of the next A6 and A8 sedans, as well as the...

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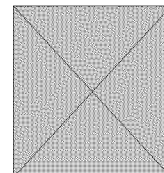
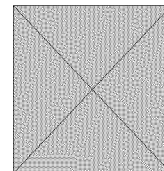
## Downsized 3-Cylinder Engines Not Refined Enough For Mercedes

Mar 13, 2014 02:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



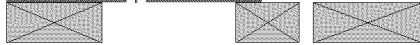
Three-cylinder engines are all the rage right now. Once the preserve of basic economy cars, they're now used in everything from the latest generation of economy vehicles, through sporty hatchbacks like the 2015 MINI Cooper and Ford Fiesta 1.0 EcoBoost, to BMW's i8 plug-in hybrid sports car. Mercedes-Benz though will not be

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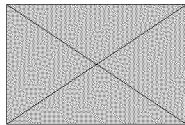
joining the three-pot...

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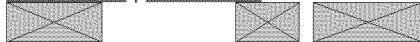
## Growth In Mass-Transit Usage Outpaces Increase In Miles Driven In U.S.

Mar 13, 2014 01:02 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



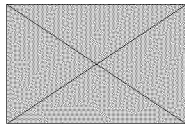
A straightforward way to save fuel is to ditch a car for mass transit, and that's what many U.S. drivers are doing. According to recently-published data (pdf) from the American Public Transportation Association--a mass-transit advocacy group--in 2013 U.S. public transit use was at its highest in 57 years. U.S. riders took 10.7 billion trips on...

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## Autolib Electric Car-Sharing Service Expands Into London From Paris

Mar 13, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
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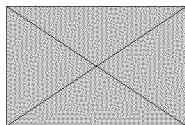
Car-sharing services have proven popular for city-based users, many preferring to use the conveniently-located cars in lieu of buying, owning and running their own. Few have been more successful than the Parisian Autolib electric car sharing business though. Owned by Bolloré, it runs thousands of Bolloré Bluecar EVs in Paris, each of which is used...

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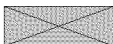
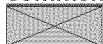
## Audi To Add Plug-In Hybrid Models Of Next A6, A8 Sedans, Q7 SUV

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(Antony Ingram)



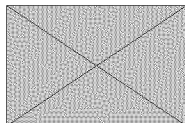
Audi, in its search for alternatives to conventional propulsion, has finally nailed its colors to a mast--and that mast is plug-in hybrids. In addition to the A3 Sportback e-tron later this year and plans for a plug-in hybrid version of the A4, the German automaker could develop plug-in hybrid variants of the A6 and A8 sedans and the Q7 SUV, too...

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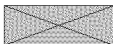
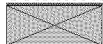
## Volkswagen To Triple Battery Capacity With Lithium-Air Technology?

Mar 13, 2014 11:00 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Fossil fuels may not be the cleanest way of powering us between two points on a map, but there's little doubt they offer convenience. So far, scientists have struggled to find batteries for electric cars that match the huge amounts of energy stored in a gallon of gasoline or diesel. As a result we get big, heavy batteries with relatively short...

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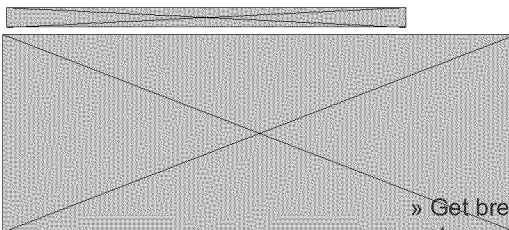
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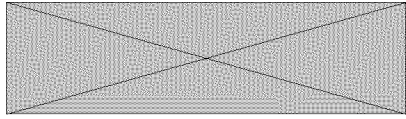
As GM confronts the prospect of years of litigation following its delayed recall, CEO Mary Barra's more urgent challenge is to show the public that her company's culture has changed and GM is taking responsibility for the problem, crisis-control experts say. ... » [READ](#)

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Fiat CEO Sergio Marchionne predicted first-quarter earnings will rise amid "strong" industrywide demand this month for Chrysler in the United States. Business in the United States is going well, while the Brazilian market is "choppy," Marchionne told reporters today in Geneva. ... » [READ](#)

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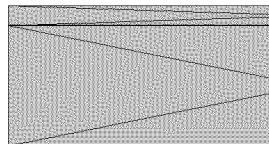
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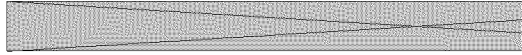
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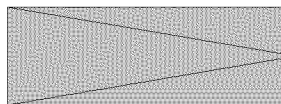
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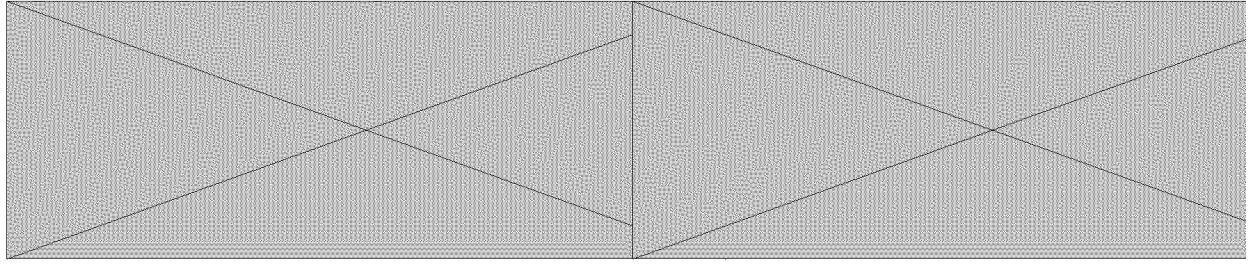
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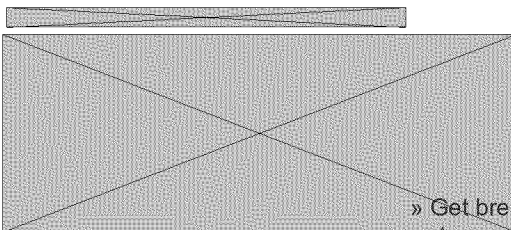
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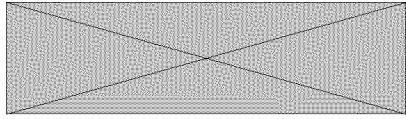
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**Ford to move medium-duty truck line from Mexico to Ohio**

## **CFPB fills auto finance liaison job**

4:04 pm U.S. ET | Mar 13

## **First signs of GM ignition switch flaw emerged in 2001**

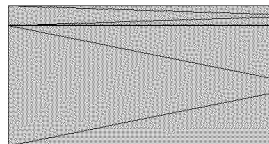
8:33 pm U.S. ET | Mar 12

## **DOT's Foxx updates lawmakers on GM investigation**

UPDATED: 3/13/14 1:14 pm ET - adds detail

11:59 am U.S. ET | Mar 13

## **Union opponents sue Volkswagen, UAW over**



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» **April 7, 2014 - PACE Awards**

» **May 13, 2014 - Marketing Seminar - Los Angeles**

» **June 3, 2014 - Rising Stars**

» **June 4, 2014 - ANE Congress**

» **Sept. 23, 2014 - NY Marketing Seminar**

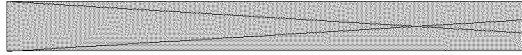
### **Tennessee plant**

4:18 pm U.S. ET | Mar 13



### **VW Group targets 10 million sales this year on model expansion**

5:50 am U.S. ET | Mar 13



### **BMW Group posts fourth-quarter profit gain on 3-series demand**

7:29 am U.S. ET | Mar 13



### **Mercedes plans 'tailor-made' C class**

7:58 am U.S. ET | Mar 13



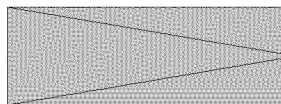
### **Auto industry files 18% more international patents in 2013**

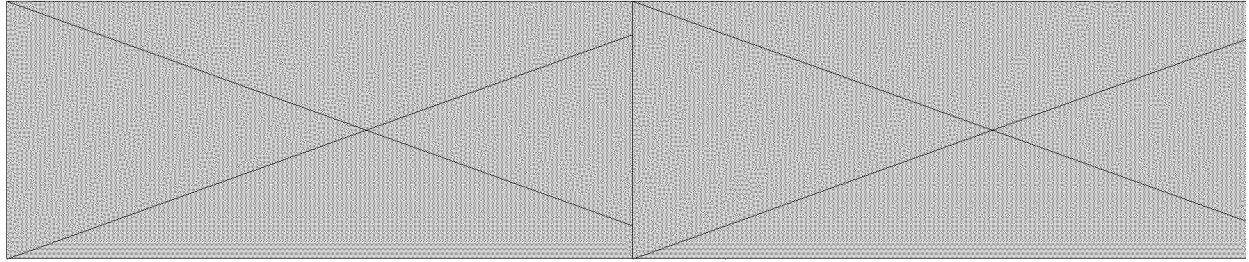
3:20 pm U.S. ET | Mar 13



### **Chrysler recalls 49,400 Chargers for headlight issue**

1:49 pm U.S. ET | Mar 13





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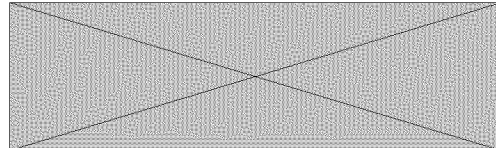
..

**To:** Bunker, Byron[bunker.byron@epa.gov]  
**From:** Automotive News  
**Sent:** Fri 3/14/2014 12:52:37 PM  
**Subject:** A.M. NEWSCAST: Volkswagen colluded with UAW in election, lawsuit alleges | GM losing 3rd director | Where cameras beat 'beeps'

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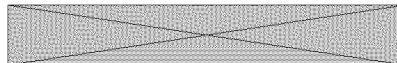
**March 14, 2014**



**VW election sparks suit »**

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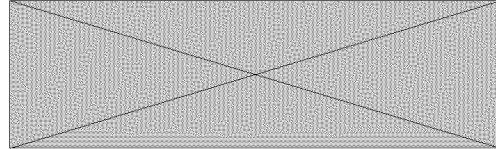


**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Fri 3/14/2014 1:00:52 PM  
**Subject:** A.M. NEWSCAST: Volkswagen colluded with UAW in election, lawsuit alleges | GM losing 3rd director | Where cameras beat 'beeps'

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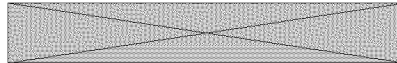
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..

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** D'Ambrosi, Anthony  
**Sent:** Fri 3/14/2014 1:41:30 PM  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill ... Ugghhh - I hope that forecast is wrong!

Are you (EPA) able to provide other OEM's IUVP test data for 2013CY?

I don't know if it's possible, but we'd be interested in 13CY data for Toyota, Honda, GM, Ford and VW.

Please advise.

Thanks and have a great weekend!

Tony

**From:** Pidgeon, Bill [mailto:pidgeon.bill@epa.gov]  
**Sent:** Thursday, March 13, 2014 4:22 PM  
**To:** D'Ambrosi, Anthony  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Thanks for the update Tony. I heard someone say that snow is in the forecast for next week...

Bill

\*\*\*\*\*

William M. Pidgeon  
Mechanical Engineer  
U.S. Environmental Protection Agency  
Compliance Division, N69  
2000 Traverwood Drive  
Ann Arbor, MI 48105-2195

[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416

Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Thursday, March 13, 2014 2:14 PM  
**To:** Pidgeon, Bill  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill,

We were able to procure that gentleman's vehicle. It will be back in mid-April for a retest.

FYI – the customer is elderly and wanted to wait until the weather warmed up (note at this rate – it could mean no retest until June ☺)

Thanks,  
Tony

**From:** Pidgeon, Bill [<mailto:pidgeon.bill@epa.gov>]  
**Sent:** Tuesday, March 04, 2014 2:40 PM  
**To:** D'Ambrosi, Anthony  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Tony,

Thanks for the update.

Best wishes,

Bill

\*\*\*\*\*

William M. Pidgeon  
Mechanical Engineer  
U.S. Environmental Protection Agency  
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2000 Traverwood Drive  
Ann Arbor, MI 48105-2195  
[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Monday, March 03, 2014 2:27 PM  
**To:** Pidgeon, Bill  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill,

Thanks for the feedback. We are going to try to procure this customer's vehicle again and re-run the test.

If we have trouble, I will let you know.

Best Regards,

Tony

**From:** Pidgeon, Bill [<mailto:pidgeon.bill@epa.gov>]  
**Sent:** Friday, February 28, 2014 1:42 PM  
**To:** D'Ambrosi, Anthony  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Tony,

Sorry for the delay – I'm not very familiar with the ORVR test.

§86.157-98(d)(3) says:

"The fuel flow shall continue until the amount of fuel dispensed is at least 85 percent of nominal fuel tank capacity, determined to the nearest one-tenth of a U.S. gallon (0.38 liter)."

So, your ORVR test is explicitly a void test. However, if you would like to argue that in this particular test, the mistake led to a more stringent test, I'm open to evidence and logic. If not, you'll have to void the test.

Best wishes,

Bill

\*\*\*\*\*

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Mechanical Engineer  
U.S. Environmental Protection Agency  
Compliance Division, N69  
2000 Traverwood Drive  
Ann Arbor, MI 48105-2195  
[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Thursday, February 27, 2014 10:22 AM  
**To:** Pidgeon, Bill  
**Cc:** Horton, John  
**Subject:** IUVP ORVR/EVAP Test Sequence

Hi Bill,

It was nice talking to you today.

Please see details of the test we discussed below.

The tested vehicle is a 2012MY 2.4L Optima and during the ORVR / 2-Day Evap test sequence, we were unable to refill the vehicle to at least 85% capacity.

- Tank volume is 18.5 gallons (85-95% → 15.7 – 17.5 gal).
- The vehicle could only be refueled to 14.7 gallons (~ 80%).
- The vehicle completed the test sequence and passed all applicable ORVR/Evap standards.
- The following day, we completely drained the vehicle and re-fueled this vehicle with the following results:

1st shut-off = 17.5 Gal.

2nd shut-off = 17.7 Gal.

3rd shut-off = 18.0 Gal. With Spit-Back.

As we discussed, the decision is whether to treat this test as valid (return car to customer) or VOID (conduct retest of ORVR/Evap).

If you could kindly provide your thoughts, it would be greatly appreciated.

Thanks!

Best Regards,

Tony



**Tony D'Ambrosi**

**Senior Manager**

**Certification and Compliance**

Office : (734) 337  
2231

Cell : (734) 890  
6470

Hyundai-Kia America Technical Center,  
Inc. E-mail  
[adambrosi@hatci.com](mailto:adambrosi@hatci.com)

**6800 Geddes Rd, Superior Twp., MI  
48198**



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**To:** [REDACTED] **Ex. 6**  
**From:** Ball, Joel  
**Sent:** Fri 3/14/2014 2:56:28 PM  
**Subject:** RE: Audi - Catalytic Converter

Hello [REDACTED] **Ex. 6**

Thank you for your inquiry regarding the federally required emissions warranty. The Clean Air Act requires manufacturers of light duty vehicles to warranty the catalytic converters for 8 years or 80,000 miles. The procedure for making a claim is to bring the vehicle to a manufacturer authorized repair facility (dealership) and give them the opportunity to diagnose the problem before making the repair. If the dealership has a reason that they diagnose the issue as something other than the catalyst then they should repair that part (which might not be covered under warranty).

However, from what you have told me, it does not sound like they have done a proper diagnosis (simply clearing the codes and waiting to see if they return.) I have received complaints from other people in your situation that had the fault code return after the 80,000 mile limit was exceeded, then the dealership denied the warranty based on the mileage. I recommend you contact the Audi customer service department and explain the situation. Ask them to repair your vehicle under warranty or provide a written explanation of why the warranty claim is being denied. The following web page provides more information regarding the federal emissions warranty requirements: [www.epa.gov/obd/pubs/420f09048.pdf](http://www.epa.gov/obd/pubs/420f09048.pdf)

I hope this information is helpful.

Joel Ball  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4238  
ball.joel@epa.gov

**From:** LaCroix, John  
**Sent:** Wednesday, March 12, 2014 6:06 AM  
**To:** Ball, Joel  
**Subject:** FW: Audi - Catalytic Converter

Joel,



Here's a good one for a snowy day.

John

**From:** Ex. 6  
**Sent:** Tuesday, March 11, 2014 6:52 PM  
**To:** LaCroix, John  
**Subject:** Audi - Catalytic Converter

Hi John –

I am having some trouble at audi. I received a Catalytic Converter check engine for my Audi A4 which has 79,500 miles. The dealer refuses to replace it and tells me that they will reset the light and I must return to the dealership if it comes on again, and then they will replace the Cat.

I just wanted to see if this is the right process.

Thanks,

**Ex. 6**

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** D'Ambrosi, Anthony  
**Sent:** Fri 3/14/2014 8:32:37 PM  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Great ... thanks Bill!

You do the same,  
Tony

**From:** Pidgeon, Bill [mailto:pidgeon.bill@epa.gov]  
**Sent:** Friday, March 14, 2014 4:33 PM  
**To:** D'Ambrosi, Anthony  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Tony,

I never was approached to provide other OEM's IUVP test data. I'll look into it.

Have a nice weekend,

Bill

\*\*\*\*\*

William M. Pidgeon  
Mechanical Engineer  
U.S. Environmental Protection Agency  
Compliance Division, N69  
2000 Traverwood Drive  
Ann Arbor, MI 48105-2195  
[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Friday, March 14, 2014 9:42 AM  
**To:** Pidgeon, Bill  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill ... Ugghhh - I hope that forecast is wrong!

Are you (EPA) able to provide other OEM's IUVP test data for 2013CY?

I don't know if it's possible, but we'd be interested in 13CY data for Toyota, Honda, GM, Ford and VW.

Please advise.

Thanks and have a great weekend!

Tony

**From:** Pidgeon, Bill [<mailto:pidgeon.bill@epa.gov>]  
**Sent:** Thursday, March 13, 2014 4:22 PM  
**To:** D'Ambrosi, Anthony  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Thanks for the update Tony. I heard someone say that snow is in the forecast for next week...

Bill

\*\*\*\*\*

William M. Pidgeon  
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Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Thursday, March 13, 2014 2:14 PM  
**To:** Pidgeon, Bill  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill,

We were able to procure that gentleman's vehicle. It will be back in mid-April for a retest.

FYI – the customer is elderly and wanted to wait until the weather warmed up (note at this rate – it could mean no retest until June ☺)

Thanks,  
Tony

**From:** Pidgeon, Bill [<mailto:pidgeon.bill@epa.gov>]  
**Sent:** Tuesday, March 04, 2014 2:40 PM  
**To:** D'Ambrosi, Anthony  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Tony,

Thanks for the update.

Best wishes,

Bill

\*\*\*\*\*

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2000 Traverwood Drive  
Ann Arbor, MI 48105-2195  
[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Monday, March 03, 2014 2:27 PM  
**To:** Pidgeon, Bill  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill,

Thanks for the feedback. We are going to try to procure this customer's vehicle again and re-run the test.

If we have trouble, I will let you know.

Best Regards,

Tony

**From:** Pidgeon, Bill [<mailto:pidgeon.bill@epa.gov>]  
**Sent:** Friday, February 28, 2014 1:42 PM  
**To:** D'Ambrosi, Anthony

**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Tony,

Sorry for the delay – I'm not very familiar with the ORVR test.

**§86.157-98(d)(3)** says:

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So, your ORVR test is explicitly a void test. However, if you would like to argue that in this particular test, the mistake led to a more stringent test, I'm open to evidence and logic. If not, you'll have to void the test.

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Bill

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[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Thursday, February 27, 2014 10:22 AM  
**To:** Pidgeon, Bill  
**Cc:** Horton, John

**Subject:** IUVP ORVR/EVAP Test Sequence

Hi Bill,

It was nice talking to you today.

Please see details of the test we discussed below.

The tested vehicle is a 2012MY 2.4L Optima and during the ORVR / 2-Day Evap test sequence, we were unable to refill the vehicle to at least 85% capacity.

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3rd shut-off = 18.0 Gal. With Spit-Back.

As we discussed, the decision is whether to treat this test as valid (return car to customer) or VOID (conduct retest of ORVR/Evap).

If you could kindly provide your thoughts, it would be greatly appreciated.

Thanks!

Best Regards,

Tony



**Tony D'Ambrosi**

Office : (734) 337  
2231

**Senior Manager**

Cell : (734) 890  
6470

**Certification and Compliance**

Hyundai-Kia America Technical Center,  
Inc. E-mail  
[adambrosi@hatci.com](mailto:adambrosi@hatci.com)

**6800 Geddes Rd, Superior Twp., MI  
48198**



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**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** [Ex. 7]@vw.com]  
**From:** [Ex. 7]  
**Sent:** Mon 3/17/2014 3:11:18 PM  
**Subject:** RE: Off-Cycle Credits

Hello Jim:

I would like to try again to schedule a VW/EPA conference call to have a preliminary discussion regarding off-cycle GHG credits. If possible, we would like to do this within the next few days. I have meetings tomorrow and Wednesday mornings at 0900-1030. Do you have an opening in your schedule that would work?

Best regards,

[Ex. 7]

---

**Ex. 7**

Engineering and Environmental Office  
Volkswagen Group of America, Inc.

Phone: [Ex. 7]

Cell: [Ex. 7]

E-Mail: [Ex. 7]

---

**From:** [Ex. 7]  
**Sent:** Monday, March 10, 2014 3:00 PM  
**To:** 'Snyder, Jim'  
**Cc:** [Ex. 7]@vw.com)  
**Subject:** RE: Off-Cycle Credits

Hello Jim:

Thanks for the response. Unfortunately, Thursday morning (03/13/14) doesn't work for us. Since this call does not involve our German colleagues, afternoons are okay. Would a call on Wednesday (03/12/14) after 3:00 p.m. or Thursday (03/13/14) after 2:00 p.m. work?

Best regards,

[Ex. 7]

## Ex. 7

Emission Regulations and Certification  
Engineering and Environmental Office  
Volkswagen Group of America, Inc.

Phone: Ex. 7

Cell: Ex. 7

E-Mail: Ex. 7

-----Original Appointment-----

**From:** Snyder, Jim [<mailto:Snyder.Jim@epa.gov>]

**Sent:** Friday, March 07, 2014 4:01 PM

**To:** Ex. 7

**Subject:** New Time Proposed: Off-Cycle Credits

**When:** Tuesday, March 11, 2014 10:00 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).

**Where:** Online Meeting

**Ex. 7** We already have mtgs from 10 to 12 on Tuesday. Wed morning too but Thursday morning is open. Afternoons are available too if its just us but I assume there may be German call-ins?

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

-----  
New Meeting Time Proposed:

Thursday, March 13, 2014 10:00 AM-11:00 AM (GMT-05:00) Eastern Time (US & Canada).

**To:** Good, David[good.david@epa.gov]  
**Cc:** Wehrly, Linc[wehrly.linc@epa.gov]; [Ex. 7]@vw.com; Snyder, Jim[Snyder.Jim@epa.gov]; David J. Friedman (David.Friedman@dot.gov)[David.Friedman@dot.gov]  
**From:** [Ex. 7]  
**Sent:** Mon 3/17/2014 6:29:47 PM  
**Subject:** Copy of 2013 Volkswagen Final Passenger Car CAFE and CREE Reports  
Final CAFE & CREE 2013 LDV to EPA .pdf

Hello Dave;

Please find a copy of the 2013 Volkswagen Group Final Passenger Car (Import and Domestic) CAFE and Passenger Car CREE reports. The Verify final status was set to yes. All Verify entered data was processed under the manufacturer code VWX for 2013 model year. If you have any questions please let me know.

Best regards,

[Ex. 7]

[Ex. 7]

VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: [Ex. 7]  
Fax: [Ex. 7]  
[Ex. 7]

# VOLKSWAGEN

GROUP OF AMERICA

Ms. Gina McCarthy, Administrator  
U.S. Environmental Protection Agency HQ  
William Jefferson Clinton Building  
1200 Pennsylvania Ave, N.W.  
Mail Code 1101A  
Washington, D.C. 20460

Mr. Oliver Schmidt Name  
General Manager Title  
EEO Department  
248 754 4201 Phone  
248 754 4207 Fax  
Oliver.Schmidt@vw.com E-Mail

March 17, 2014 Date

Subject: Volkswagen Group 2013 Final Passenger Car CAFE/CREE Reports

Dear Ms. McCarthy;

Enclosed are the 2013 Final Passenger Car CAFE and CREE reports in accordance with the regulations contained in 40 CFR 600.512-12. These reports have been processed and successfully submitted into the EPA Verify system.

Following is the manufacturer's calculation for the 2013 final fuel economy average. This calculation is provided for the Volkswagen Group of America, Inc. (Volkswagen) Import and Domestic Passenger Car categories. The final CAFE values are based upon approved EPA fuel economy data and final production volumes for the 2013 model year vehicles. The Volkswagen brands for the 2013 Passenger Car CAFE reports include the brands of Volkswagen, Audi, Bentley, Lamborghini, Bugatti and Porsche.

The Import Passenger Car category Baseline (Non-AMFA) CAFE adjusted value is 33.0 MPG. The adjusted CAFE with AMFA Credits included is **34.0** MPG. This value does not exceed the maximum cap and increase for 2013 of 1.2 MPG as specified in paragraph (h) of 40 CFR 600.510-12.

The calculated reformed CAFE Import category standard is **34.4** MPG, as specified in paragraph (c) of 49 CFR 531.5.

The Domestic Passenger Car category final adjusted CAFE value is **35.0** MPG.

The calculated reformed CAFE Domestic category standard is **32.8** MPG, as specified in paragraph (c) of 49 CFR 531.5.

The footprint based reformulated CAFE standards are derived using measurement methods which comply with Department of Transportation and EPA requirements.

VOLKSWAGEN GROUP OF AMERICA, INC.  
3800 HAMLIN ROAD  
AUBURN HILLS, MI 48326  
PHONE +1 248 754 5000

The domestic content calculation as requested in the EPA certification mail-out CD-92-06 is summarized below. The specific calculations and monetary result materials are available upon request. The Volkswagen procedure for this calculation follows the procedure outlined in 40 CFR 600.511-08. Our procedure is described as follows:

For vehicles produced outside of the NAFTA territory, the "declared value" of foreign components is basically, the ex-factory value of each of the models which we have imported. The freight and insurance is added to this value and is labeled as "adjusted import value". The value of U.S. components has not been excluded because this value is included in the declared value upon importation of the vehicles. The "cost of production" as defined in the regulations equates to our wholesale price to the dealer.

The following Imported Volkswagen vehicle brands and carlines produced outside the NAFTA territory do not exceed the 75% criteria for the domestic category classification.

Volkswagen	Audi	Bentley	Lamborghini	Bugatti
Golf / Golf R	A3	Mulsanne	Gallardo Coupe	Veyron
GTI	A3 quattro	Continental Flying Spur	Gallardo Spyder	
CC	A4 / S4	Continental GT	Aventador Coupe	
CC 4Motion	A4 quattro	Continental GTC	Aventador Spyder	
Tiguan	A5 quattro / A5 Cabriolet quattro / S5 / S5 Cabriolet	Continental Supersport Convertible		
Touareg	allroad quattro			
Eos	A6 / A6 quattro			
	A7 quattro / S7			
	A8 / A8L / S8			
	TT Coupe quattro			
	TT Roadster quattro			
	TTRS			

Porsche
Boxster / Boxster S / 911 Carrera / 911 Carrera S / 911 Carrera 4 / 911 Carrera 4S
911 Carrera Cabriolet / 911 Carrera S Cabriolet / 911 Carrera 4 Cabriolet
911 Carrera 4S Cabriolet / Panamera / Panamera 4 / Panamera S / Panamera 4S
Panamera GTS / Panamera Turbo / Panamera Turbo S / Panamera Hybrid / 911 Turbo
911 Turbo S / 911 Turbo Cabriolet / 911 Turbo S Cabriolet

For vehicles produced within the NAFTA territory (Mexico), we followed the procedure established according to NAFTA Appendix 300-A.3, where Paragraph 1 states:

"For purposes of the Energy Policy and Conservation Act of 1975, 42 U.S.C. 6201...the United States shall consider an automobile to be domestically manufactured in any model year if at least 75 percent of the cost to the manufacturer of such automobile is attributable to value added in Canada, Mexico or the United States...Paragraph 1 shall apply beginning with the next model year after January 1, 2004, where the enterprise subject to the fuel economy requirements for those automobiles under the CAFE Act, has not made an election under subparagraph a)."

For purposes of paragraph 1, and according to 40 CFR 600.511-08, the ratio obtained in the domestic production determination was obtained from dividing the sum of the declared value (as defined in §600.502) of all of the imported components installed or included on

automobiles produced within such a car line within a given model year plus the cost of transportation and insuring such components to the United States Port of entry, by the cost of production (as defined in §600.502) of all automobiles within such a car line.

The calculated results for each of the Volkswagen carlines: Jetta, Jetta Hybrid, Jetta SportWagen Beetle and Beetle Convertible are greater than the 0.25 ratio and therefore all Volkswagen Group carlines, with the exception of the Passat, are determined to be Import within the Import category Passenger Car report.

The Volkswagen Passat models, assembled in the Chattanooga, Tennessee USA manufacturing facility, are in the Domestic category Passenger Car report.

Additionally, we herewith submit the 2013 Volkswagen model year Passenger Car CREE Final Report. This 2013 model year submission includes Volkswagen, Audi, Bentley, Lamborghini and Bugatti brand passenger cars. Enclosed is the manufacturer's calculated fleet average and documents providing the necessary information to establish the fleet average. The calculated fleet average is determined in accordance with 40 CFR 600.510-12 (j)(2)(iv). This final value is then capped at **265** g/mi CREE after application of the maximum decrease in average CREE determined in accordance with 40 CFR 600.510-12(i).

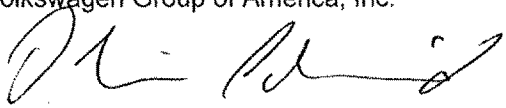
The footprint based CO<sub>2</sub> standard of **257** g/mi is determined in accordance with 40 CFR 86.1818-12.

Please note that Volkswagen intends to provide additional information required by 86.1865-12 by May 1, 2014.

Enclosed is the list of vehicle models and test parameters and in-use CREE standards in accordance with 600.512-12(c)(11).

If there are any questions concerning this report, please contact Leonard Kata of my staff at (248) 754-4204.

Sincerely,  
Volkswagen Group of America, Inc.



Mr. Oliver Schmidt  
General Manager  
Engineering and Environmental Office

Attachments

cc: David J. Friedman, Acting Administrator  
U.S. DOT, National Highway Traffic Safety Administration

Byron Bunker, Director  
U.S. EPA, Compliance Division

# 2013 VWGoA Import Passenger Car CAFE Baseline

INDEX #	Brand	Carline	DISP L/CID	Trans	CITY	HWY	COMB Round	Model Type Sales	Weighted Sales/MPG
073	Audi	A3	2.0 / 120	S6	39.0620	59.3190	46.2		
058	Audi	A3	2.0 / 121	M6	25.3000	40.3000	30.4		
059	Audi	A3	2.0 / 121	S6	26.6000	38.2000	30.8		
060	Audi	A3 quattro	2.0 / 121	S6	27.2000	37.1000	30.9		
035	Audi	A4	2.0 / 121	AV	30.1160	44.4305	35.2		
040	Audi	A4 quattro	2.0 / 121	M6	27.6093	43.8849	33.1		
041	Audi	A5 quattro	2.0 / 121	M6	27.6093	43.8849	33.1		
037	Audi	A4 quattro	2.0 / 121	S8	25.3798	40.5189	30.5		
038	Audi	A5 quattro	2.0 / 121	S8	25.3798	40.5189	30.5		
039	Audi	A5 Cabriolet quattro	2.0 / 121	S8	25.3798	40.5189	30.5		
134	Audi	allroad quattro	2.0 / 121	S8	25.2000	37.3000	29.5		
102	Audi E85	A4 quattro	2.0 / 121	S8	25.7950	40.5561	30.8		
103	Audi E85	A5 quattro	2.0 / 121	S8	25.7950	40.5561	30.8		
104	Audi E85	A5 Cabriolet quattro	2.0 / 121	S8	25.7950	40.5561	30.8		
101	Audi E85	allroad quattro	2.0 / 121	S8	25.2000	37.3000	29.5		
036	Audi	A5 Cabriolet	2.0 / 121	AV	30.1160	44.4305	35.2		
065	Audi	A6	2.0 / 121	AV	31.4000	46.9000	36.9		
070	Audi	A6 quattro	2.0 / 121	S8	25.3798	40.5189	30.5		
077	Audi	A6 quattro	3.0 / 183	S8	23.1369	38.1000	28.1		
076	Audi	A7 quattro	3.0 / 183	S8	22.3225	37.2632	27.2		
128	Audi	A8	3.0 / 183	S8	22.3225	37.2632	27.2		
129	Audi	A8L	3.0 / 183	S8	22.3225	37.2632	27.2		
098	Audi	A8	4.0 /	S8	21.7885	38.4000	27.1		
097	Audi	A8L	4.0 /	S8	19.8586	33.9000	24.4		
099	Audi	S8	4.0 /	S8	19.0000	33.3000	23.6		
109	Audi	A8L	6.3 / 384	S8	15.9000	25.7000	19.2		
047	Audi	S7	4.0 /	S7	20.6682	34.7086	25.3		
048	Audi	S6	4.0 /	S7	20.6682	34.7086	25.3		
049	Audi	RS5	4.2 / 254	S7	19.1000	30.0000	22.8		
052	Audi	RS5 Cabriolet	4.2 / 254	S7	19.2000	28.9000	22.6		
045	Audi	S4	3.0 / 183	M6	20.0000	33.4000	24.4		
046	Audi	S5	3.0 / 183	M6	20.0000	33.4000	24.4		
042	Audi	S4	3.0 / 183	S7	22.4000	35.8000	26.9		
043	Audi	S5	3.0 / 183	S7	22.4000	35.8000	26.9		
044	Audi	S5 Cabriolet	3.0 / 183	S7	22.1000	34.7000	26.4		
066	Audi	TT Coupe quattro	2.0 / 121	S6	27.6693	40.7741	32.3		
067	Audi	TT Roadster quattro	2.0 / 121	S6	27.6693	40.7741	32.3		
069	Audi	TTRS Coupe	2.5 / 151	M6	21.2000	34.2000	25.6		
096	Bentley	Mulsanne	6.8 / 412	S8	12.9000	21.8000	15.8		
110	Bentley - E85	Continental Flying Spur	6.0 / 366	S6	13.7000	24.6000	17.1		
113	Bentley - E85	Continental GT	6.0 / 366	S6	13.9000	24.7000	17.3		
111	Bentley - E85	Continental GTC	6.0 / 366	S6	13.7000	24.6000	17.1		
112	Bentley - E85	Continental Supersports Convertible	6.0 / 366	S6	13.9000	24.7000	17.3		
131	Bentley - E85	Continental GT	6.0 / 366	S8	15.4000	28.3000	19.4		
130	Bentley - E85	Continental GTC	6.0 / 366	S8	14.4000	26.7000	18.2		
108	Bentley	Continental GT	4.0 /	S8	19.0000	33.5000	23.6		
107	Bentley	Continental GTC	4.0 /	S8	17.4000	30.8000	21.6		
088	Bugatti	Veyron	V16 / 488	L7	10.0000	17.9000	12.5		
092	Lamborghini	Aventador Coupe	6.5 / 396	S7	12.6000	25.2000	16.3		
093	Lamborghini	Aventador Roadster	6.5 / 396	S7	11.5000	21.2000	14.5		
032	Lamborghini	Gallardo Coupe	5.2 / 303	M6	14.0000	24.0000	17.2		
030	Lamborghini	Gallardo Coupe	5.2 / 303	S6	16.1000	25.4000	19.3		
033	Lamborghini	Gallardo Spyder	5.2 / 303	M6	13.0000	22.6000	16.1		
031	Lamborghini	Gallardo Spyder	5.2 / 303	S6	16.0000	25.4000	19.2		
089	Volkswagen	Beetle	2.0 / 121	M6	26.1929	42.1688	31.6		
019	Volkswagen	Beetle	2.0 / 121	S6	27.1059	41.8383	32.2		
027	Volkswagen	Beetle	R5 / 151	M5	26.3908	42.7715	31.9		
017	Volkswagen	Beetle	R5 / 151	S6	27.2108	38.8835	31.5		
020	Volkswagen	Beetle Convertible	2.0 / 121	S6	27.6991	40.6463	32.3		
090	Volkswagen	Beetle Convertible	2.0 / 121	M6	26.1929	42.1688	31.6		
018	Volkswagen	Beetle Convertible	R5 / 151	S6	26.3739	37.8501	30.5		
004	Volkswagen	CC	2.0 / 121	M6	25.7700	44.2070	31.7		
001	Volkswagen	CC	2.0 / 121	S6	27.0241	42.7996	32.4		
003	Volkswagen	CC 4MOTION	3.6 / 219	S6	20.5000	33.5000	24.8		

Ex. 4 - CBI

002	Volkswagen	CC	3.6 / 219	S6	21.2000	35.1000	25.8
021	Volkswagen	Eos	2.0 / 121	S6	27.5000	41.5000	32.4
081	Volkswagen	Golf (TDI)	2.0 / 120	M6	38.7349	59.8800	46.1
072	Volkswagen	Golf (TDI)	2.0 / 120	S6	39.0620	59.3190	46.2
026	Volkswagen	Golf	R5 / 151	M5	26.2330	44.2580	32.1
016	Volkswagen	Golf	R5 / 151	S6	27.5817	42.3567	32.7
057	Volkswagen	Golf R	2.0 / 121	M6	23.9000	37.1000	28.5
023	Volkswagen	GTI	2.0 / 121	M6	25.9143	41.0853	31.1
022	Volkswagen	GTI	2.0 / 121	S6	29.8063	43.2768	34.7
100	Volkswagen	Jetta Hybrid	1.4 /	S7	57.5000	65.3000	60.8
087	Volkswagen	Jetta	2.0 / 121	M5	28.8000	46.2000	34.7
086	Volkswagen	Jetta	2.0 / 121	S6	28.1000	41.4990	32.9
080	Volkswagen	Jetta (TDI)	2.0 / 120	M6	38.7349	59.8800	46.1
071	Volkswagen	Jetta (TDI)	2.0 / 120	S6	39.0620	59.3190	46.2
025	Volkswagen	Jetta	R5 / 151	M5	26.2330	44.2580	32.1
015	Volkswagen	Jetta	R5 / 151	S6	27.5817	42.3567	32.7
051	Volkswagen	Jetta [GLI]	2.0 / 121	M6	27.5574	45.1917	33.4
050	Volkswagen	Jetta [GLI]	2.0 / 121	S6	29.5285	44.8437	34.9
079	Volkswagen	Jetta SportWagen (TDI)	2.0 / 120	M6	38.7349	59.8800	46.1
074	Volkswagen	Jetta SportWagen (TDI)	2.0 / 120	S6	37.6000	56.2000	44.2
094	Volkswagen	Beetle (TDI)	2.0 / 120	S6	37.3000	55.3000	43.7
135	Volkswagen	Beetle Convertible (TDI)	2.0 / 120	S6	36.4000	51.9000	42.1
084	Volkswagen	Beetle (TDI)	2.0 / 120	M6	36.0583	57.9748	43.4
085	Volkswagen	Beetle Convertible (TDI)	2.0 / 120	M6	36.0583	57.9748	43.4
024	Volkswagen	Jetta SportWagen	R5 / 151	M5	26.2330	44.2580	32.1
014	Volkswagen	Jetta SportWagen	R5 / 151	S6	27.5817	42.3567	32.7
056	Volkswagen	Tiguan	2.0 / 121	M6	21.7000	35.8000	26.4
068	Volkswagen	Tiguan	2.0 / 121	S6	26.2279	36.8821	30.1
202	Porsche	Boxster	2.7L	A7	27.9000	44.9000	33.6
201	Porsche	Boxster	2.7L	M6	25.9000	41.5000	31.2
222	Porsche	Boxster S	3.4L	A7	26.3000	41.9000	31.6
221	Porsche	Boxster S	3.4L	M6	24.8000	38.5000	29.5
102	Porsche	911 Carrera	3.4L	A7	25.4000	39.5000	30.3
101	Porsche	911 Carrera	3.4L	M7	23.7000	38.2000	28.6
106	Porsche	911 Carrera S	3.8L	A7	24.6000	38.0000	29.2
105	Porsche	911 Carrera S	3.8L	M7	23.8449	37.9484	28.6
110	Porsche	911 Carrera 4	3.4L	A7	25.4965	38.6494	30.1
109	Porsche	911 Carrera 4	3.4L	M7	24.0491	37.8468	28.8
114	Porsche	911 Carrera 4S	3.8L	A7	24.2000	36.7000	28.6
113	Porsche	911 Carrera 4S	3.8L	M7	23.1000	36.9000	27.8
104	Porsche	911 Carrera Cabriolet	3.4L	A7	25.9904	39.4499	30.7
103	Porsche	911 Carrera Cabriolet	3.4L	M7	24.0491	37.9499	28.8
108	Porsche	911 Carrera S Cabriolet	3.8L	A7	23.9000	38.0000	28.7
107	Porsche	911 Carrera S Cabriolet	3.8L	M7	23.6474	37.0494	28.2
112	Porsche	911 Carrera 4 Cabriolet	3.4L	A7	24.9475	37.5494	29.4
111	Porsche	911 Carrera 4 Cabriolet	3.4L	M7	23.5983	36.5997	28.1
116	Porsche	911 Carrera 4S Cabriolet	3.8L	A7	23.3000	36.5000	27.8
115	Porsche	911 Carrera 4S Cabriolet	3.8L	M7	22.9000	36.1000	27.4
90	Porsche	Panamera	3.6L	A7	22.6000	37.3000	27.5
91	Porsche	Panamera 4	3.6L	A7	22.2000	36.5000	27.0
92	Porsche	Panamera S	4.8L	A7	20.2000	33.2000	24.5
93	Porsche	Panamera 4S	4.8L	A7	20.2000	33.2000	24.5
94	Porsche	Panamera GTS	4.8L	A7	19.7000	32.7000	24.0
95	Porsche	Panamera Turbo	4.8L	A7	18.5000	32.0000	22.8
96	Porsche	Panamera Turbo S	4.8L	A7	18.5000	32.0000	22.8
97	Porsche	Panamera Hybrid	3.0L	A8	30.4000	40.9000	34.4
50	Porsche	911 Turbo	3.8L	A7	20.6000	34.3000	25.1
52	Porsche	911 Turbo S	3.8L	A7	20.6000	34.3000	25.1
54	Porsche	911 Turbo	3.8L	M6	20.5000	33.2000	24.8
51	Porsche	911 Turbo Cabriolet	3.8L	A7	19.7489	33.8482	24.3
53	Porsche	911 Turbo S Cabriolet	3.8L	A7	19.7489	33.8482	24.3
55	Porsche	911 Turbo Cabriolet	3.8L	M6	20.0000	33.1000	24.3

VOLKSWAGEN GROUP Total Projected Units			
Baseline unadj unrounded w/o FFV (MPG)			
Baseline adjusted unrounded w/o FFV (MPG)			
Baseline adjusted rounded w/o FFV (MPG)			

Ex. 4 - CBI



# 2013 VWGoA Import Passenger Car CAFE AMFA

INDEX #	Brand	Carline	DISP L/CID	Trans	ETW	IW	CITY	HWY	COMB Round	Model Type Sales	Weighted Sales/MPG
073	Audi	A3	2.0 / 120	S6		3500	39.0620	59.3190	46.2		
058	Audi	A3	2.0 / 121	M6		3500	25.3000	40.3000	30.4		
059	Audi	A3	2.0 / 121	S6		3500	26.6000	38.2000	30.8		
060	Audi	A3 quattro	2.0 / 121	S6		4000	27.2000	37.1000	30.9		
035	Audi	A4	2.0 / 121	AV		4000	30.1160	44.4305	35.2		
040	Audi	A4 quattro	2.0 / 121	M6	4000	4000	27.6093	43.8849	33.1		
041	Audi	A5 quattro	2.0 / 121	M6		4000	27.6093	43.8849	33.1		
037	Audi	A4 quattro	2.0 / 121	S8	4000	4000	25.3798	40.5189	30.5		
038	Audi	A5 quattro	2.0 / 121	S8	4000	4000	25.3798	40.5189	30.5		
039	Audi	A5 Cabriolet quattro	2.0 / 121	S8		4000	25.3798	40.5189	30.5		
134	Audi	allroad quattro	2.0 / 121	S8		4000	25.2000	37.3000	29.5		
102	Audi E85	A4 quattro	2.0 / 121	S8	4000	4000	42.3928	66.9352	50.8		
103	Audi E85	A5 quattro	2.0 / 121	S8	4000	4000	42.3928	66.9352	50.8		
104	Audi E85	A5 Cabriolet quattro	2.0 / 121	S8		4000	42.3928	66.9352	50.8		
101	Audi E85	allroad quattro	2.0 / 121	S8		4000	41.2759	61.2201	48.4		
036	Audi	A5 Cabriolet	2.0 / 121	AV		4000	30.1160	44.4305	35.2		
065	Audi	A6	2.0 / 121	AV	4000	4000	31.4000	46.9000	36.9		
070	Audi	A6 quattro	2.0 / 121	S8		4000	25.3798	40.5189	30.5		
077	Audi	A6 quattro	3.0 / 183	S8		4000	23.1369	38.1000	28.1		
076	Audi	A7 quattro	3.0 / 183	S8		4500	22.3225	37.2632	27.2		
128	Audi	A8	3.0 / 183	S8		4500	22.3225	37.2632	27.2		
129	Audi	A8L	3.0 / 183	S8		4500	22.3225	37.2632	27.2		
098	Audi	A8	4.0 /	S8		4500	21.7885	38.4000	27.1		
097	Audi	A8L	4.0 /	S8		4500	19.8586	33.9000	24.4		
099	Audi	S8	4.0 /	S8		5000	19.0000	33.3000	23.6		
109	Audi	A8L	6.3 / 384	S8		5000	15.9000	25.7000	19.2		
047	Audi	S7	4.0 /	S7		4500	20.6682	34.7086	25.3		
048	Audi	S6	4.0 /	S7		4500	20.6682	34.7086	25.3		
049	Audi	R55	4.2 / 254	S7		4000	19.1000	30.0000	22.8		
052	Audi	R55 Cabriolet	4.2 / 254	S7		4500	19.2000	28.9000	22.6		
045	Audi	S4	3.0 / 183	M6		4000	20.0000	33.4000	24.4		
046	Audi	S5	3.0 / 183	M6		4000	20.0000	33.4000	24.4		
042	Audi	S4	3.0 / 183	S7		4000	22.4000	35.8000	26.9		
043	Audi	S5	3.0 / 183	S7		4000	22.4000	35.8000	26.9		
044	Audi	S5 Cabriolet	3.0 / 183	S7		4500	22.1000	34.7000	26.4		
066	Audi	TT Coupe quattro	2.0 / 121	S6		3500	27.6693	40.7741	32.3		
067	Audi	TT Roadster quattro	2.0 / 121	S6		3500	27.6693	40.7741	32.3		
069	Audi	TTRS Coupe	2.5 / 151	M6		3500	21.2000	34.2000	25.6		
096	Bentley	Mulsanne	6.8 / 412	S8		6000	12.9000	21.8000	15.8		
110	Bentley - E85	Continental Flying Spur	6.0 / 366	S6		6000	22.5270	40.5507	28.2		
113	Bentley - E85	Continental GT	6.0 / 366	S6		5500	23.1199	40.6448	28.7		
111	Bentley - E85	Continental GTC	6.0 / 366	S6		6000	22.5270	40.5507	28.2		
112	Bentley - E85	Continental Supersports Convertible	6.0 / 366	S6		5500	23.1199	40.6448	28.7		
131	Bentley - E85	Continental GT	6.0 / 366	S8		5500	25.2459	47.0066	31.9		
130	Bentley - E85	Continental GTC	6.0 / 366	S8		6000	23.8863	44.6725	30.2		
108	Bentley	Continental GT	4.0 /	S8		5500	19.0000	33.5000	23.6		
107	Bentley	Continental GTC	4.0 /	S8		6000	17.4000	30.8000	21.6		
088	Bugatti	Veyron	V16 / 488	L7		4500	10.0000	17.9000	12.5		
092	Lamborghini	Aventador Coupe	6.5 / 396	S7	4000	4000	12.6000	25.2000	16.3		
093	Lamborghini	Aventador Roadster	6.5 / 396	S7		4000	11.5000	21.2000	14.5		
032	Lamborghini	Gallardo Coupe	5.2 / 303	M6		3500	14.0000	24.0000	17.2		
030	Lamborghini	Gallardo Coupe	5.2 / 303	S6		3500	16.1000	25.4000	19.3		
033	Lamborghini	Gallardo Spyder	5.2 / 303	M6	4000	4000	13.0000	22.6000	16.1		
031	Lamborghini	Gallardo Spyder	5.2 / 303	S6	4000	4000	16.0000	25.4000	19.2		
089	Volkswagen	Beetle	2.0 / 121	M6		3500	26.1929	42.1688	31.6		
019	Volkswagen	Beetle	2.0 / 121	S6		3500	27.1059	41.8383	32.2		
027	Volkswagen	Beetle	R5 / 151	M5		3500	26.3908	42.7715	31.9		
017	Volkswagen	Beetle	R5 / 151	S6		3500	27.2108	38.8835	31.5		
020	Volkswagen	Beetle Convertible	2.0 / 121	S6		3500	27.6991	40.6463	32.3		
090	Volkswagen	Beetle Convertible	2.0 / 121	M6		3500	26.1929	42.1688	31.6		
018	Volkswagen	Beetle Convertible	R5 / 151	S6		3500	26.3739	37.8501	30.5		
004	Volkswagen	CC	2.0 / 121	M6		3500	25.7700	44.2070	31.7		
001	Volkswagen	CC	2.0 / 121	S6		3500	27.0241	42.7996	32.4		
003	Volkswagen	CC 4MOTION	3.6 / 219	S6		4000	20.5000	33.5000	24.8		
002	Volkswagen	CC	3.6 / 219	S6	4000	4000	21.2000	35.1000	25.8		
021	Volkswagen	Eos	2.0 / 121	S6		4000	27.5000	41.5000	32.4		
081	Volkswagen	Golf (TDI)	2.0 / 120	M6		3500	38.7349	59.8800	46.1		
072	Volkswagen	Golf (TDI)	2.0 / 120	S6		3500	39.0620	59.3190	46.2		
026	Volkswagen	Golf	R5 / 151	M5		3500	26.2330	44.2580	32.1		

Ex. 4 - CBI



## 2013 VWGoA Import Passenger Car Reformulated Standard

Brand	Carline	Carline Code	FootPrint Index #	FOOTPRINT	2013 MPG Target	Sales	MPG Weighted Sales/Target
Audi	A3	65		41.9	36.17		
Audi	A3 quattro	66		41.9	36.17		
Audi	A4	10		46.5	33.23		
Audi	A4 quattro	20		46.5	33.23		
Audi	A5 Cabriolet	51		46.8	33.06		
Audi	A5 Cabriolet quattro	53		46.8	33.06		
Audi	A5 quattro	40		46.8	33.06		
Audi	A6	80		50.7	30.94		
Audi	A6 quattro	75		50.7	30.94		
Audi	A7 quattro	70		51.3	30.64		
Audi	A8	95		52.6	30.00		
Audi	A8L	96	1	54.9	28.94		
Audi	A8L	96	2	55.2	28.81		
Audi	allroad quattro	26		47.8	32.49		
Audi	RS5	43		47.3	32.77		
Audi	RS5 Cabriolet	52		47.3	32.77		
Audi	S4	30		46.7	33.11		
Audi	S5	42		46.8	33.06		
Audi	S5 Cabriolet	56		46.8	33.06		
Audi	S6	76		50.3	31.14		
Audi	S7	72		51.3	30.64		
Audi	S8	97		52.6	30.00		
Audi	TT Coupe quattro	37	1	41.1	36.73		
Audi	TT(S) Coupe quattro	37	2	41.1	36.73		
Audi	TT Roadster quattro	38	1	41.1	36.73		
Audi	TT(S) Roadster quattro	38	2	41.1	36.73		
Audi	TTRS Coupe	61		41.1	36.73		
Bentley	Continental Flying Spur	40		53.3	29.67		
Bentley	Continental GT	35		49.2	31.72		
Bentley	Continental GTC	45		49.2	31.72		
Bentley	Mulsanne	15		56.9	28.46		
Bentley	Supersports Convertible	55		48.5	32.10		
Bugatti	Veyron	500		48.8	31.94		
Lamborghini	Aventador Coupe	475		49.7	31.46		
Lamborghini	Aventador Roadster	476		49.7	31.46		
Lamborghini	Gallardo Coupe	406		44.5	34.45		
Lamborghini	Gallardo Spyder	426		44.5	34.45		
Porsche	911 Carrera	501		40.3	36.80		
Porsche	911 Carrera 4	505		40.3	36.80		
Porsche	911 Carrera 4 Cabriolet	506		40.3	36.80		
Porsche	911 Carrera 4S	507		40.3	36.80		

**Ex. 4 - CBI**

Porsche	911 Carrera 4S Cabriolet	508		40.3	36.80
Porsche	911 Carrera Cabriolet	502		40.3	36.80
Porsche	911 Carrera S	503		40.3	36.80
Porsche	911 Carrera S Cabriolet	504		40.3	36.80
Porsche	911 Turbo	930		38.4	36.80
Porsche	911 Turbo Cabriolet	931		38.4	36.80
Porsche	911 Turbo S	932		38.4	36.80
Porsche	911 Turbo S Cabriolet	933		38.4	36.80
Porsche	Boxster	860		39.9	36.80
Porsche	Boxster S	861		39.9	36.80
Porsche	Panamera	600		52.2	30.20
Porsche	Panamera 4	604		52.2	30.20
Porsche	Panamera 4S	602		52.2	30.20
Porsche	Panamera GTS	606		52.2	30.20
Porsche	Panamera Hybrid	607		52.2	30.20
Porsche	Panamera S	601		52.2	30.20
Porsche	Panamera Turbo	603		51.9	30.34
Porsche	Panamera Turbo S	605		51.9	30.34
Volkswagen	Beetle	230	1	42.7	35.62
Volkswagen	Beetle	230	2	42.5	35.75
Volkswagen	Beetle Convertible	235	1	42.7	35.62
Volkswagen	Beetle Convertible	235	2	42.5	35.75
Volkswagen	CC	293	1	45.3	33.95
Volkswagen	CC	293	2	45.3	33.95
Volkswagen	CC 4MOTION	298		45.3	33.95
Volkswagen	Eos	216		42.9	35.48
Volkswagen	Golf	206	1	42.4	35.82
Volkswagen	Golf [TDI]	206	2	42.0	36.10
Volkswagen	Golf R	212		42.3	35.89
Volkswagen	GTI	211		42.3	35.89
Volkswagen	Jetta	221	1	43.8	34.89
Volkswagen	Jetta	221	2	43.8	34.89
Volkswagen	Jetta [TDI]	221	2	43.8	34.89
Volkswagen	Jetta [GLI]	221	3	43.5	35.09
Volkswagen	Jetta Hybrid	222		44.1	34.70
Volkswagen	Jetta SportWagen	225		42.3	35.89
Volkswagen	Jetta SportWagen [TDI]	225		42.3	35.89
Volkswagen	Tiguan	160	1	44.0	34.76
Volkswagen	Tiguan	160	2	43.4	35.15

## Ex. 4 - CBI

Unrounded CAFE Standard  
Rounded CAFE Standard

34.3760  
34.4

## 2013 VWGoA Domestic Passenger Car CAFE

**Ex. 4 - CBI**

INDEX #	Brand	Carline	Engine	DISP	Trans	CITY	HWY	COMB Round
64	Volkswagen	Passat	2.0L TDI	2.0 / 121	M6	38.2000	62.8000	46.4
62	Volkswagen	Passat	2.0L TDI	2.0 / 121	S6	37.9000	56.8000	44.6
63	Volkswagen	Passat	3.6L VR6 FSI	3.6 / 219	S6	23.9000	37.3000	28.5
82	Volkswagen	Passat	R5 2.5L SRE	R5 / 151	M5	26.2264	43.3511	31.9
83	Volkswagen	Passat	R5 2.5L SRE	R5 / 151	S6	26.9188	40.6076	31.7
VOLKSWAGEN GROUP Total Projected Units								
Baseline unadj unrounded (MPG)								34.7484
Baseline adj unrounded (MPG)								34.9914
Baseline adj rounded (MPG)								35.0

## 2013 VWGoA Domestic Passenger Car Reformulated Standard

Brand	Carline	FOOTPRINT INDEX	FOOTPRINT	2013 MPG Target	Sales	Weighted Sales/Target
Volkswagen	Passat	1	47.2	32.83		
Volkswagen	Passat	2	47.2	32.83		
Volkswagen	Passat	3	46.9	33.00		
			Total Projected Units		<b>Ex. 4 - CBI</b>	
			Unround CAFE Standard			
			VWGoA CAFE Standard			

# 2013 Final VWGoA Passenger Car GHG Fleet Average

Brand	Carline	Engine	Trans	Model Type Sales	CREE	CREE FFV	CO2 Target	WGT CREE	WGT FFV	WGT CO2 Target
Audi	A3	2.0L TDI	S6	1,834	221	221	241.1	405,314	405,314	442,177.4
Audi	A3	2.0L TFSI	M6	118	292	292	241.1	34,456	34,456	28,449.8
Audi	A3	2.0L TFSI	S6	855	289	289	241.1	247,095	247,095	206,140.5
Audi	A3 quattro	2.0L TFSI	S6	912	287	287	241.1	261,744	261,744	219,883.2
Audi	A4	2.0L TFSI	AV	8,671	252	252	262.8	2,185,092	2,185,092	2,278,738.8
Audi	A4 quattro	2.0L TFSI	M6	2,370	268	268	262.8	635,160	635,160	622,836.0
Audi	A4 quattro	2.0L TFSI	S8	6,840	292	292	262.8	1,997,280	1,997,280	1,797,552.0
Audi	A4 quattro	2.0L TFSI	S8	15,537	292	174	262.8	4,536,804	2,703,438	4,083,123.6
Audi	A5 Cabriolet	2.0L TFSI	AV	1,067	252	252	264.2	268,884	268,884	281,901.4
Audi	A5 Cabriolet quattro	2.0L TFSI	S8	1,556	292	292	264.2	454,352	454,352	411,095.2
Audi	A5 Cabriolet quattro	2.0L TFSI	S8	3,083	292	166	264.2	900,236	511,778	814,528.6
Audi	A5 quattro	2.0L TFSI	M6	864	268	268	264.2	231,552	231,552	228,268.8
Audi	A5 quattro	2.0L TFSI	S8	2,434	292	292	264.2	710,728	710,728	643,062.8
Audi	A5 quattro	2.0L TFSI	S8	5,517	292	166	264.2	1,610,964	915,822	1,457,591.4
Audi	A6	2.0L TFSI	S8	2,129	241	241	282.6	513,089	513,089	601,655.4
Audi	A6 quattro	2.0L TFSI	S8	7,151	292	292	282.6	2,088,092	2,088,092	2,020,872.6
Audi	A6 quattro	3.0L TFSI	S8	9,988	318	318	282.6	3,176,184	3,176,184	2,822,608.8
Audi	A7 quattro	3.0L TFSI	S8	6,626	329	329	285.4	2,179,954	2,179,954	1,891,060.4
Audi	A8	3.0L V8 FSI	S8	1,018	329	329	291.6	334,922	334,922	296,848.8
Audi	A8	4.0L V8 TSI	S8	361	331	331	291.6	119,491	119,491	105,267.6
Audi	A8L	3.0L V8 FSI	S8	2,530	329	329	302.4	832,370	832,370	765,072.0
Audi	A8L	4.0L V8 TSI	S8	78	366	366	302.4	28,548	28,548	23,587.2
Audi	A8L	6.3L W12	S8	1,648	464	464	303.8	764,672	764,672	500,662.4
Audi	allroad quattro	2.0L TFSI	S8	2,141	301	301	268.9	644,441	644,441	575,714.9
Audi	allroad quattro	2.0L TFSI	S8	4,825	301	174	268.9	1,452,325	839,550	1,297,442.5
Audi	R55	4.2L V8 FSI	S7	1,453	390	390	266.6	566,670	566,670	387,369.8
Audi	R55 Cabriolet	4.2L V8 FSI	S7	92	394	394	266.6	36,248	36,248	24,527.2
Audi	S4	3.0L TFSI	M6	1,434	366	366	263.7	524,844	524,844	378,145.8
Audi	S4	3.0L TFSI	S7	4,902	332	332	263.7	1,627,464	1,627,464	1,292,657.4
Audi	S5	3.0L TFSI	M6	838	366	366	264.2	306,708	306,708	221,399.6
Audi	S5	3.0L TFSI	S6	3,085	332	332	264.2	1,024,220	1,024,220	815,057.0
Audi	S5 Cabriolet	3.0L TFSI	S7	1,828	338	338	264.2	617,864	617,864	482,957.6
Audi	S6	4.0L V8 TSI	S7	1,809	352	352	280.7	636,768	636,768	507,786.3
Audi	S7	4.0L V8 TSI	S7	1,106	352	352	285.4	389,312	389,312	315,652.4
Audi	S8	4.0L V8 TSI	S8	1,015	379	379	291.6	384,685	384,685	295,974.0
Audi	TT Coupe quattro	2.0L TFSI	S6	1,185	275	275	237.3	325,875	325,875	281,200.5
Audi	TT Roadster quattro	2.0L TFSI	S6	500	275	275	237.3	137,500	137,500	118,650.0
Audi	TTRS Coupe	2.5L T	M6	507	349	349	237.3	176,943	176,943	120,311.1
Bentley	Continental Flying Spur	6.0L W12	S6	192	520	299	294.9	99,840	57,408	56,620.8
Bentley	Continental GT	4.0L	S6	546	378	378	275.5	206,388	206,388	150,423.0
Bentley	Continental GT	6.0L W12	S6	50	514	294	275.5	25,700	14,700	13,775.0
Bentley	Continental GT	6.0L W12	S8	474	459	280	275.5	217,566	132,720	130,587.0
Bentley	Continental GTC	4.0L	S6	783	412	412	275.5	322,596	322,596	215,716.5
Bentley	Continental GTC	6.0L W12	S6	435	520	299	275.5	226,200	130,065	119,842.5
Bentley	Continental GTC	6.0L W12	S8	218	490	280	275.5	106,820	61,040	60,059.0
Bentley	Mulsanne	6.8L V8	S8	234	564	564	307.0	131,976	131,976	71,838.0
Bentley	Supersports Convertible	6.0L W12	S6	15	514	294	272.2	7,710	4,410	4,083.0
Bugatti	Veyron	V16	L7	6	710	710	273.6	4,260	4,260	1,641.6
Lamborghini	Aventador Coupe	6.5L V12	S7	124	547	547	277.9	67,828	67,828	34,459.6
Lamborghini	Aventador Roadster	6.5L V12	S7	31	614	614	277.9	19,034	19,034	8,614.9
Lamborghini	Gallardo Coupe	5.2L	M6	16	518	518	253.3	8,288	8,288	4,052.8
Lamborghini	Gallardo Coupe	5.2L	S6	249	463	463	253.3	115,287	115,287	63,071.7
Lamborghini	Gallardo Spyder	5.2L	M6	2	553	553	253.3	1,106	1,106	506.6
Lamborghini	Gallardo Spyder	5.2L	S6	182	464	464	253.3	84,448	84,448	46,100.6
Volkswagen	Beetle	2.0L TFSI	M	1,141	282	282	243.9	321,762	321,762	278,289.9
Volkswagen	Beetle	2.0L TFSI	S6	5,213	276	276	243.9	1,438,788	1,438,788	1,271,450.7
Volkswagen	Beetle	R5 2.5L SRE	M5	1,512	278	278	244.4	420,336	420,336	369,532.8
Volkswagen	Beetle	R5 2.5L SRE	S6	15,528	282	282	263.3	4,378,896	4,378,896	4,088,522.4
Volkswagen	Beetle [TDI]	2.0L TDI	M6	696	235	235	244.8	163,560	163,560	170,380.8
Volkswagen	Beetle [TDI]	2.0L TDI	S6	3,138	234	234	244.8	734,292	734,292	768,182.4

## 2013 Final VWGoA Passenger Car GHG Fleet Average

Volkswagen	Beetle Convertible	2.0L TFSI	M6	876	282	282	243.9	247,032	247,032	213,656.4
Volkswagen	Beetle Convertible	2.0L TFSI	S6	4,424	276	276	243.9	1,221,024	1,221,024	1,079,013.6
Volkswagen	Beetle Convertible	R5 2.5L SRE	S6	12,570	291	291	244.4	3,657,870	3,657,870	3,072,108.0
Volkswagen	Beetle Convertible [TDI]	2.0L TDI	M6	496	235	235	244.8	116,560	116,560	121,420.8
Volkswagen	Beetle Convertible [TDI]	2.0L TDI	S6	2,182	243	243	244.8	530,226	530,226	534,153.6
Volkswagen	CC	2.0L TFSI	M6	1,863	281	281	257.1	523,503	523,503	478,977.3
Volkswagen	CC	2.0L TFSI	S6	28,595	273	273	257.1	7,806,435	7,806,435	7,351,774.5
Volkswagen	CC	3.6L VR6 FSI	S6	726	345	345	257.1	250,470	250,470	186,654.6
Volkswagen	CC 4MOTION	3.6L VR6 FSI	S6	1,073	358	358	257.1	384,134	384,134	275,868.3
Volkswagen	Eos	2.0L TFSI	S6	4,775	272	272	245.8	1,298,800	1,298,800	1,173,695.0
Volkswagen	Golf 2 dr [TDI]	2.0L TDI	M6	2,756	222	222	241.5	611,832	611,832	665,574.0
Volkswagen	Golf 2 dr [TDI]	2.0L TDI	S6	5,884	221	221	241.5	1,300,364	1,300,364	1,420,986.0
Volkswagen	Golf 2 dr	R5 2.5L SRE	M5	827	276	276	243.4	228,252	228,252	201,291.8
Volkswagen	Golf 2dr	R5 2.5L SRE	S6	1,163	271	271	243.4	315,173	315,173	283,074.2
Volkswagen	Golf 4 dr	R5 2.5L SRE	S6	8,115	271	271	243.4	2,199,165	2,199,165	1,975,191.0
Volkswagen	Golf R	2.0L TFSI	M6	2,710	313	313	243.0	848,230	848,230	658,530.0
Volkswagen	GTI	2.0L TFSI	M6	6,021	286	286	243.0	1,722,006	1,722,006	1,463,103.0
Volkswagen	GTI	2.0L TFSI	S6	11,152	255	255	243.0	2,843,760	2,843,760	2,709,936.0
Volkswagen	Jetta	2.0 MPI	M5	4,295	256	256	250.0	1,099,520	1,099,520	1,073,750.0
Volkswagen	Jetta	2.0 MPI	S6	23,516	270	270	250.0	6,349,320	6,349,320	5,879,000.0
Volkswagen	Jetta	R5 2.5L SRE	M5	4,045	276	276	250.0	1,116,420	1,116,420	1,011,250.0
Volkswagen	Jetta	R5 2.5L SRE	S6	70,701	271	271	250.0	19,159,971	19,159,971	17,675,250.0
Volkswagen	Jetta [GLI]	2.0L TFSI	M6	2,863	267	267	248.6	764,421	764,421	711,741.8
Volkswagen	Jetta [GLI]	2.0L TFSI	S6	6,662	255	255	248.6	1,698,810	1,698,810	1,656,173.2
Volkswagen	Jetta [TDI]	2.0L TDI	M6	5,190	222	222	250.0	1,152,180	1,152,180	1,297,500.0
Volkswagen	Jetta [TDI]	2.0L TDI	S6	24,991	221	221	250.0	5,523,011	5,523,011	6,247,750.0
Volkswagen	Jetta Hybrid	1.4L	S6	6,067	146	146	251.5	885,782	885,782	1,525,850.5
Volkswagen	Jetta SportWagen	R5 2.5L SRE	M5	411	276	276	243.0	113,436	113,436	99,873.0
Volkswagen	Jetta SportWagen	R5 2.5L SRE	S6	7,221	271	271	243.0	1,956,891	1,956,891	1,754,703.0
Volkswagen	Jetta SportWagen [TDI]	2.0L TDI	M6	4,329	222	222	243.0	961,038	961,038	1,051,947.0
Volkswagen	Jetta SportWagen [TDI]	2.0L TDI	S6	15,839	231	231	243.0	3,658,809	3,658,809	3,848,877.0
Volkswagen	Passat	3.6L VR6 FSI	S6	3,189	312	312	264.7	994,968	994,968	844,128.3
Volkswagen	Passat	R5 2.5L SRE	M5	1,887	278	278	266.1	524,586	524,586	502,130.7
Volkswagen	Passat	R5 2.5L SRE	S6	83,869	280	280	266.1	23,483,320	23,483,320	22,317,540.9
Volkswagen	Passat [TDI]	2.0L TDI	M6	3,326	219	219	266.1	728,394	728,394	885,048.6
Volkswagen	Passat [TDI]	2.0L TDI	S6	36,660	228	228	266.1	8,358,480	8,358,480	9,755,226.0
Volkswagen	Tiguan	2.0L TFSI	M6	165	336	336	251.0	55,440	55,440	41,415.0
Volkswagen	Tiguan	2.0L TFSI	S6	17,322	295	295	251.0	5,109,990	5,109,990	4,347,822.0
				559,448				152,271,154	148,457,920	143,977,567.5

2013 PC Fleet Average Standard (g/ml)	257
2013 PC Fleet Average (g/ml)	272
Final Capped 2013 PC Fleet Average w/ FFV(g/ml)	265



## 2013 Sub-Configuration / In- Use

Brand	Carline	ETW	TRLHP	AXLE RATIO	ENG CODE	Trans	TransConfig	CREE	In-Use CREE	Basic Eng	Target Coefficient A	Target Coefficient B	Target Coefficient C	Set Coefficient A	Set Coefficient B	Set Coefficient C
Audi	A3	3625	12.7	3.94	CBFA	M6	10	292	321	D3PA	30.00	0.2000	0.0186	12.0000	0.0400	0.0186
Audi	A3	3750	12.8	4.06	CBFA	S6	13	289	318	D3PA	32.00	0.2700	0.0200	16.0000	0.1300	0.0201
Audi	A3 [TDI]	3750	10.9	3.04	CBEA	S6	8	221	243	DUSN	29.00	0.2100	0.0168	13.0000	0.0790	0.0169
Audi	A3 quattro	3875	12.8	3.136	CCTA	S6	20	287	316	D3UA	34.00	0.3500	0.0178	11.0000	0.1400	0.0182
Audi	A4	3875	12.3	4.61	CAEB	AV	37	252	277	D3UB	36.64	0.2424	0.0173	-1.1020	0.2874	0.0158
Audi	A4 quattro	4000	12.9	3.69	CAEB	M6	4	268	295	D4UB	36.19	0.3292	0.0176	3.9340	-0.0450	0.0195
Audi	A4 quattro	4000	13.7	2.85	CPMA	S8	29	292	321	D4UB	36.87	0.4449	0.0174	0.0900	0.5281	0.0155
Audi	A4 quattro [FFV]	4250	15.0	2.85	CAEB	S8	29	166	183	DFUB	36.87	0.4449	0.0174	0.0900	0.5281	0.0155
Audi	A5 Cabriolet	4250	13.1	2.51	CAEB	AV	37	252	277	D3UB	36.64	0.2424	0.0173	-1.1020	0.2874	0.0158
Audi	A5 Cabriolet quattro	4250	15.0	2.85	CPMA	S8	4	292	321	D4UB	36.87	0.4449	0.0174	0.0900	0.5281	0.0155
Audi	A5 Cabriolet quattro [FFV]	4250	15.0	2.85	CPMA	S8	4	166	183	DFUB	36.87	0.4449	0.0174	0.0900	0.5281	0.0155
Audi	A5 quattro	3875	12.9	3.69	CAEB	M6	29	268	295	D4UB	36.19	0.3292	0.0176	3.9340	-0.0450	0.0195
Audi	A5 quattro	4000	13.7	2.85	CPMA	S8	4	292	321	D4UB	36.87	0.4449	0.0174	0.0900	0.5281	0.0155
Audi	A5 quattro [FFV]	4000	13.7	2.85	CPMA	S8	4	166	183	DFUB	36.87	0.4449	0.0174	0.0900	0.5281	0.0155
Audi	A6	4000	11.4	4.92	CAEB	S8	37	241	265	D3UB	36.19	0.1555	0.0167	2.3380	0.2821	0.0148
Audi	A6 quattro	4000	11.4	4.92	CAEB	S8	15	292	321	D3UB	34.40	0.4304	0.0175	-10.3410	0.3002	0.0165
Audi	A6 quattro	4250	13.5	3.204	CTUA	S8	15	318	350	D3UF	35.745	0.43044	0.01746	9.464	0.37112	0.01682
Audi	A7 quattro	4500	13.5	2.85	CTUA	S8	15	329	362	D3UF	35.75	0.4304	0.0175	12.2750	0.3870	0.0166
Audi	A8	5000	14.3	3.2	CEUA	S8	15	331	364	D3UJ	40.92	0.2539	0.0176	8.2950	0.3364	0.0151
Audi	A8	4750	12.9	3.2	CTUB	S8	15	329	362	D3UF	48.11	0.3979	0.0158	-1.3710	0.2170	0.0146
Audi	A8L	4750	13.0	3.2	CTUB	S8	15	329	362	D3UF	40.915	0.25393	0.017577	8.295	0.3364	0.015074
Audi	A8L	5250	15.3	3.09	CEJA	S8	11	464	510	DUA8	50.13	0.3979	0.0179	15.7140	0.4028	0.0165
Audi	A8L	5000	14.3	3.2	CEUA	S8	15	366	403	D3UJ	48.11	0.3979	0.0158	-1.3710	0.2170	0.0146
Audi	allroad quattro	4250	14.9	3.08	CPMA	S8	9	301	331	D4UB	39.12	0.4666	0.0198	2.5400	0.4634	0.0192
Audi	allroad quattro [FFV]	4250	14.9	3.08	CPMA	S8	9	174	191	DFUB	39.12	0.4666	0.0198	2.5400	0.4634	0.0192
Audi	RS5	4250	14.3	4.38	CFS	S7	36	390	429	D3UL	46.09	0.3473	0.0174	-13.7580	0.1979	0.0168
Audi	RS5 Cabriolet	4750	15.4	4.38	CFS	S7	36	394	433	D3UL	47.21	0.3473	0.0205	-15.4890	0.2769	0.0186
Audi	S4	4250	13.2	3.68	CGXC	M6	27	366	403	D3UF	40.915	0.31469	0.016995	20.008	-0.0144	0.018217
Audi	S4	4250	13.5	3.88	CGXC	S7	33	332	365	D3UF	41.59	0.34725	0.01682	1.012	0.40512	0.015481
Audi	S5	4250	13.2	3.62	CGXC	M6	27	366	403	D3UF	40.92	0.3147	0.0170	20.0080	-0.0144	0.0182
Audi	S5	4250	15.2	3.87	CGXC	S6	33	332	365	D3UF	41.59	0.3473	0.0168	1.0120	0.4051	0.0155
Audi	S5 Cabriolet	4750	14.7	3.88	CGXC	S7	33	338	372	D3UF	45.64	0.3436	0.0187	5.2830	0.2026	0.0194
Audi	S6	4750	14.1	4.09	CEUC	S7	35	352	387	D3UJ	43.16	0.3617	0.0178	-15.7820	0.2865	0.0154
Audi	S7	4750	14.5	4.09	CEUC	S7	35	352	387	D3UJ	44.962	0.36895	0.018217	-9.442	-0.434	0.021825
Audi	S8	5000	14.4	3.2	CGTA	S8	15	379	417	D3UJ	47.44	0.3979	0.0164	-7.1040	0.3031	0.0143
Audi	TT Coupe quattro	3500	12.7	3.444	CETA	S6	20	275	303	D3UA	36.00	0.3540	0.0167	1.0000	0.0830	0.0169
Audi	TT Coupe quattro (TTS)	3285	12.7	3.444	CDMA	S6	20	275	303	D3UA	37	0.35	0.0164	14	0.14	0.0169
Audi	TT Roadster quattro	3625	13.2	3.444	CETA	S6	20	275	303	D3UA	37.00	0.3540	0.0176	3.0000	0.1090	0.0178
Audi	TT Roadster quattro (TTS)	3428	18.1	3.444	CDMA	S6	20	275	303	D3UA	38	0.35	0.0174	16	0.13	0.0181
Audi	TTRS Coupe	3625	13.9	2.91	CEPB	M6	6	349	384	D3UK	39.34	0.2894	0.0202	17.4900	0.0266	0.0215

2013 Sub-Configuration / In- Use

Bentley	Continental Flying Spur	6000	15.1	3.53	CKH-D	S6	23	520	572	D501	49.70	0.2604	0.0202	10.1000	-0.0720	0.0214
Bentley	Continental GT	5500	16.1	2.85	CMMA	S6	4	378	416	D3UJ	54.85	0.0488	0.0221	-6.2050	-0.0803	0.0193
Bentley	Continental GT	5500	16.1	3.53	CKH-D	S6	23	514	565	D501	49.70	0.2604	0.0202	10.1000	-0.0720	0.0214
Bentley	Continental GT	5500	16.1	3.53	CKH-D	S8	23	459	505	D4UC	52.16	0.0488	0.0214	-9.6890	-0.0575	0.0185
Bentley	Continental GTC	6000	15.0	2.85	CMMA	S6	4	412	453	D3UJ	54.853	0.04883	0.022116	-6.205	-0.0803	0.019323
Bentley	Continental GTC	6000	16.1	3.53	CKH-B	S6	23	520	572	D501	49.70	0.2604	0.0202	10.1000	-0.0720	0.0214
Bentley	Continental GTC	6000	16.1	3.53	CKH-B	S8	23	490	539	D4UC	54.85	0.0488	0.0221	7.6140	-0.0083	0.0209
Bentley	Mulsanne	6500	18.0	2.92	CBK	S8	8	564	620	D4LA	69.92	0.1302	0.0210	20.7000	0.4449	0.0158
Bentley	Supersports Convertible	5500	15.1	3.53	CKH-A	S6	23	514	565	D501	49.7	0.2604	0.0202	10.1	-0.072	0.02136
Bugatti	Veyron	4750	18.1	2.59	CBLA (1200H	L7	2	710	781	DV16	60	0.59	0.0185	16	0.022	0.0204
Lamborghini	Aventador Coupe	4000	12.0	2.87	L539	S7	5	547	602	DL83	33.72	0.0174	0.0221	6.3620	-0.4485	0.0240
Lamborghini	Aventador Roadster	4250	13.4	2.87	L539	S7	5	614	675	DL83	40.92	0.0181	0.0233	10.8360	-0.5606	0.0261
Lamborghini	Gallardo Coupe	3750	12.1	4.06	CEH	M6	29	518	570	DLR8	41.81	0.3150	0.0169	15.6700	0.0029	0.0183
Lamborghini	Gallardo Coupe	3625	12.3	4.06	CEH	S6	30	463	509	DLR8	41.81	0.3150	0.0169	11.1700	-0.1085	0.0194
Lamborghini	Gallardo Spyder	3875	12.1	4.06	CEH	M6	29	553	608	DLR8	43.84	0.3180	0.0175	16.6600	-0.0998	0.0203
Lamborghini	Gallardo Spyder	3875	12.1	4.06	CEH	S6	30	464	510	DLR8	43.84	0.3180	0.0175	8.6100	-0.0633	0.0197
Volkswagen	Beetle	3375	12.4	3.087	CPLA	M	10	282	310	DB5F	29	0.14469	0.02264	16.636	-0.0704	0.022849
Volkswagen	Beetle	3375	12.4	3.09	CBFA	M	10	282	310	D3PA	31.70	0.1338	0.0218	19.3110	-0.0864	0.0221
Volkswagen	Beetle	3375	12.4	3.087	CCTA	M	10	282	310	D3UA	31.70	0.1338	0.0218	19.9630	-0.1052	0.0227
Volkswagen	Beetle	3375	11.8	3.64	CBTA-M	M5	26	278	306	DU3M	28.10	0.1338	0.0216	10.1160	0.0253	0.0216
Volkswagen	Beetle	3375	11.8	3.65	CBTA-M	M5	26	278	306	DM59	28.10	0.1338	0.0216	12.4140	0.0417	0.0211
Volkswagen	Beetle	3500	13.1	4.14	CPLA	S6	10	276	304	DB5F	29.00	0.1447	0.0226	17.0850	-0.0481	0.0223
Volkswagen	Beetle	3500	13.1	4.14	CBFA	S6	10	276	304	D3PA	32.15	0.2894	0.0206	8.0930	0.2496	0.0207
Volkswagen	Beetle	3500	13.1	3.136	CCTA	S6	14	276	304	D3UA	32.15	0.2894	0.0206	6.9690	0.2167	0.0207
Volkswagen	Beetle	3375	12.7	3.5	CBTA-M	S6	22	282	310	DU3A	28.10	0.2930	0.0210	1.7980	0.4666	0.0180
Volkswagen	Beetle	3375	12.7	3.5	CBUA-M	S6	22	282	310	DA59	28.10	0.2930	0.0210	2.2480	0.1302	0.0210
Volkswagen	Beetle [TDI]	3375	12.2	2.917	CJAA	M6	7	235	259	DU5N	31.70	0.1338	0.0218	19.9630	-0.1052	0.0227
Volkswagen	Beetle [TDI]	3375	12.2	3.04	CJAA	S6	8	234	257	DU5N	29.23	0.2532	0.0207	7.5760	0.1827	0.0203
Volkswagen	Beetle Convertible	3625	12.8	3.09	CPLA	M6	10	282	310	DB5F	30.57	0.1447	0.0233	14.8370	-0.0561	0.0235
Volkswagen	Beetle Convertible	3625	12.8	3.09	CCTA	M6	10	282	310	D3UA	31.70	0.1338	0.0218	19.9630	-0.1052	0.0227
Volkswagen	Beetle Convertible	3625	12.8	3.09	CBFA	M6	10	282	310	D3PA	37.32	0.0615	0.0233	15.5120	0.2000	0.0214
Volkswagen	Beetle Convertible	3625	13.5	3.09	CPLA	S6	10	276	304	DB5F	35.75	0.0615	0.0226	13.7130	0.0541	0.0225
Volkswagen	Beetle Convertible	3625	13.5	3.09	CBFA	S6	10	276	304	D3PA	33.27	0.2894	0.0214	9.8920	0.1736	0.0221
Volkswagen	Beetle Convertible	3625	13.5	3.14	CCTA	S6	14	276	304	D3UA	33.27	0.2894	0.0214	8.3180	0.0398	0.0222
Volkswagen	Beetle Convertible	3500	13.1	3.5	CBUA-M	S6	22	291	320	DA59	30.12	0.2930	0.0212	-8.5650	0.0695	0.0222
Volkswagen	Beetle Convertible	3500	13.1	3.5	CBTA-M	S6	22	291	320	DU3A	28.10	0.2930	0.0210	1.7980	0.4666	0.0180
Volkswagen	Beetle Convertible [TDI]	3625	12.4	2.92	CJAA	M6	3	235	259	DU5N	33.05	0.1338	0.0226	14.3880	-0.1368	0.0240
Volkswagen	Beetle Convertible [TDI]	3625	12.4	3.04	CJAA	S6	8	243	267	DU5N	30.80	0.2532	0.0212	10.8810	0.1837	0.0212
Volkswagen	CC	3625	12.5	2.917	CBFA	M6	6	281	309	D3PA	33.72	0.1338	0.0179	9.4420	0.0398	0.0175
Volkswagen	CC	3625	12.5	2.087	CCTA	M6	1	281	309	D3UA	34.00	0.1300	0.0179	6.0000	-0.1300	0.0195
Volkswagen	CC	4250	14.4	3.45	BLV	S6	20	345	380	DU46	42	0.47	0.017	0	0.38	0.017
Volkswagen	CC	3625	12.2	3.14	CBFA	S6	14	273	300	D3PA	36.00	0.2900	0.0165	14.0000	0.2700	0.0158
Volkswagen	CC	3625	12.2	3.14	CCTA	S6	12	273	300	D3UA	36.00	0.2900	0.0165	21.0000	0.1230	0.0185

## 2013 Sub-Configuration / In- Use

Volkswagen	CC 4MOTION	4250	14.4	3.81	BLV	S6	32	358	394	DU46	42	0.47	0.017	0	0.38	0.017
Volkswagen	Eos	3875	12.8	3.136	CBFA	S6	14	272	299	D3UA	39.00	0.2900	0.0171	18.0000	0.1000	0.0178
Volkswagen	Golf 2 dr [TDI]	3375	10.9	2.76	CJAA	M6	3	222	244	DU5N	30.00	0.1300	0.0181	14.0000	-0.2060	0.0199
Volkswagen	Golf 2 dr [TDI]	3375	10.9	3.04	CJAA	S6	8	221	243	DU5N	29.00	0.2100	0.0168	13.0000	-0.0190	0.0178
Volkswagen	Golf 2 dr	3375	12.1	3.39	CBUA-M	M5	19	276	304	DM59	31	0.134	0.0178	6	0.098	0.0172
Volkswagen	Golf 2 dr	3375	12.1	3.5	CBUA-M	S6	22	271	298	DA59	33.00	0.2930	0.0171	-2.0000	0.2030	0.0176
Volkswagen	Golf 2dr	3375	12.1	3.5	CBTA-M	S6	22	271	298	DU3A	33.00	0.2930	0.0171	-2.0000	0.2030	0.0176
Volkswagen	Golf 4 dr	3500	12.1	3.5	CBTA-M	S6	22	271	298	DU3A	33.00	0.2930	0.0171	-2.0000	0.2030	0.0176
Volkswagen	Golf 4 dr	3375	12.1	3.39	CBUA-M	S6	22	271	298	DA59	33.00	0.2930	0.0171	-2.0000	0.2030	0.0176
Volkswagen	Golf R	3625	13.6	3.273	CRZA	M6	17	313	344	D3UA	30	0.2	0.0186	12	0.04	0.0186
Volkswagen	GTI	3375	11.5	3.09	CBFA	M6	10	286	315	D3PA	29.00	0.2050	0.0168	8.0000	0.0470	0.0171
Volkswagen	GTI	3375	11.5	3.087	CCTA	M6	10	286	315	D3UA	30.00	0.2000	0.0186	12.0000	0.0400	0.0186
Volkswagen	GTI	3375	10.8	3.14	CBFA	S6	13	255	281	D3PA	29.00	0.2050	0.0168	11.0000	0.0470	0.0171
Volkswagen	GTI	3375	10.8	3.136	CCTA	S6	13	255	281	D3UA	29.00	0.2050	0.0168	8.0000	0.0470	0.0171
Volkswagen	Jetta	3250	10.1	3.93	CBPA	M5	34	256	282	DU36	27.00	0.1340	0.0168	-1.0000	0.0610	0.0168
Volkswagen	Jetta	3375	12.1	3.39	CBTA-M	M5	19	276	304	DU3M	31	0.134	0.0178	10	0.365	0.0149
Volkswagen	Jetta	3500	12.1	3.39	CBUA-M	M5	19	276	304	DM59	31.00	0.1340	0.0178	10.0000	0.3650	0.0149
Volkswagen	Jetta	3250	11.5	3.68	CBPA	S6	28	270	297	DU36	28.00	0.5060	0.0131	5.0000	0.4210	0.0132
Volkswagen	Jetta	3500	12.1	3.5	CBTA-M	S6	22	271	298	DA59	33	0.293	0.0171	-2	0.203	0.0176
Volkswagen	Jetta	3500	12.1	3.5	CBUA-M	S6	22	271	298	DU3A	28.551	0.20546	0.016762	2.585	0.05968	0.016878
Volkswagen	Jetta [GLI]	3500	11.5	2.92	CPLA	M6	6	267	294	DB5F	34.17	0.1447	0.0184	16.6360	-0.0824	0.0191
Volkswagen	Jetta [GLI]	3375	10.1	2.917	CBFA	M6	6	267	294	D3PA	34.17	0.1447	0.0184	14.8820	-0.0853	0.0196
Volkswagen	Jetta [GLI]	3500	11.5	2.92	CCTA	M6	6	267	294	D3UA	30.124	0.19533	0.018566	14.77	-0.052	0.019264
Volkswagen	Jetta [GLI]	3500	10.8	3.14	CPLA	S6	14	255	281	DB5F	40.69	0.0615	0.0184	22.6610	-0.0028	0.0182
Volkswagen	Jetta [GLI]	3500	10.8	3.14	CBFA	S6	14	255	281	D3PA	28.551	0.20546	0.016762	6.07	0.1729	0.016762
Volkswagen	Jetta [GLI]	3500	10.8	3.13	CCTA	S6	14	255	281	D3UA	28.55	0.2055	0.0168	2.5850	0.0597	0.0169
Volkswagen	Jetta [TDI]	3500	11.0	2.76	CJAA	M6	3	222	244	DU5N	31.47	0.1338	0.0178	12.8820	-0.0209	0.0182
Volkswagen	Jetta [TDI]	3500	11.9	3.04	CJAA	S6	8	221	243	DU5N	33.05	0.2894	0.0166	14.8370	0.1736	0.0165
Volkswagen	Jetta Hybrid	3625	10.8	3.23	CNLA	S6	16	146	161	DPHE	27.876	0.05426	0.01618	6.295	0.01447	0.015656
Volkswagen	Jetta SportWagen	3500	12.1	3.39	CBTA-M	M5	19	276	304	DU3M	31	0.134	0.0178	10	0.365	0.0149
Volkswagen	Jetta SportWagen	3625	12.1	3.39	CBUA-M	M5	19	276	304	DM59	31.00	0.1340	0.0178	6.0000	0.0980	0.0172
Volkswagen	Jetta SportWagen	3625	12.1	3.5	CBTA-M	S6	22	271	298	DU3A	33	0.293	0.0171	-2	0.203	0.0176
Volkswagen	Jetta SportWagen	3625	12.1	3.5	CBUA-M	S6	22	271	298	DA59	33	0.293	0.0171	-2	0.203	0.0176
Volkswagen	Jetta SportWagen [TDI]	3625	11.5	2.76	CJAA	M6	3	222	244	DU5N	30	0.2	0.0186	17	-0.03	0.0197
Volkswagen	Jetta SportWagen [TDI]	3750	12.3	3.04	CJAA	S6	8	231	254	DU5N	35.00	0.1800	0.0193	14.0000	0.0900	0.0191
Volkswagen	Passat	3625	10.6	3.65	CBTA-M	M5	26	278	306	DU3M	29.90	0.1338	0.0172	6.0700	0.1375	0.0161
Volkswagen	Passat	3625	10.6	3.64	CBUA-M	M5	25	278	306	DM59	29.90	0.1338	0.0172	17.0850	-0.1085	0.0181
Volkswagen	Passat	3750	12.4	3.44	CDVB	S6	20	312	343	DU41	33.721	0.28937	0.017868	20.606	0.10001	0.017914
Volkswagen	Passat	3625	11.9	3.5	CBTA-M	S6	22	280	308	DU3A	30.57	0.5064	0.0133	4.2710	0.4124	0.0136
Volkswagen	Passat	3625	11.9	3.5	CBUA-M	S6	22	280	308	DA59	30.574	0.5064	0.013328	5.845	0.43768	0.012746
Volkswagen	Passat [TDI]	3750	11.5	3.043	CKRA	M6	7	219	241	DU4S	31.024	0.13384	0.01746	16.287	-0.1186	0.018583
Volkswagen	Passat [TDI]	3750	11.5	2.917	CKRA	S6	8	228	251	DU4S	31.473	0.28937	0.016005	13.779	0.11864	0.016447
Volkswagen	Tiguan	3875	14.1	3.3	CCTA	M6	18	336	370	D3UA	37.00	0.1340	0.0247	24.0000	-0.2170	0.0251

## 2013 Sub-Configuration / In- Use

Volkswagen	Tiguan	3875	14.6	3.54	CCTA	S6	24	295	325	D3UA	33.72	0.3834	0.0226	15.5120	0.2858	0.0228
Volkswagen	Tiguan [LLR]	3875	14.1	3.3	CCTA	S6	24	300	330	D3UA	40.016	0.5064	0.021825	19.558	0.35853	0.022652

Note: Engine Codes are provided above for each sub-configuration and may be verified with the application for certification for the applicable test group. The test group for each vehicle is also identified on the Vehicle Emission Control Information Label.

**To:** Good, David[good.david@epa.gov]  
**Cc:** David Robertson[DRobertson@mazdausa.com]; Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Naoyasu Okawa  
**Sent:** Mon 3/17/2014 7:35:34 PM  
**Subject:** RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc.

Hi Dave,

I am writing to remind you that we asked the below question one month ago. So when you have time please provide your comment or advise to resolve our query.

Please let me know if you have any questions to our question.

Best Regards,

Nick

**From:** Naoyasu Okawa  
**Sent:** Monday, February 10, 2014 12:52 PM  
**To:** 'Good, David'  
**Cc:** David Robertson  
**Subject:** RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc.

Hi Dave,

We look at the update although, the update below requires us to enter CH4 standard but we understand that there would be no CH4 standard if we selected OPT-CREE.

Therefore if we select OPT-CREE, we do not need to enter CH4 standard into Verify and the standard will leave blank, correct ?

Also, will the Verify system accept data submission or accept without considering a failure even CH4 standard leaves blank, correct ?

If leaving blank has any trouble for the data submission please advise us how we should enter CH4 standard when selecting OPT-CREE.

We would like to confirm beforehand if our method where CH4 standard leaves blank would not cause any issue when submitting data into Verify.

Also, If we should ask this questions to Verify team, please let me know and then I will ask them.

Best Regards,

Nick

**From:** Good, David [<mailto:good.david@epa.gov>]

**Sent:** Friday, January 31, 2014 1:37 PM

**To:** [mb-nathan-hinderer](mailto:mb-nathan-hinderer); [william.meschievitz@tema.toyota.com](mailto:william.meschievitz@tema.toyota.com); [tommy\\_chang@ahm.honda.com](mailto:tommy_chang@ahm.honda.com); [JRugge@subaru.com](mailto:JRugge@subaru.com); [Naoyasu Okawa](mailto:Naoyasu.Okawa); [dennis.pawlak@na.mitsubishi-motors.com](mailto:dennis.pawlak@na.mitsubishi-motors.com); [KhanF@NRD.NISSAN-USA.COM](mailto:KhanF@NRD.NISSAN-USA.COM); [Tobias Glas](mailto:Tobias.Glas); [Peace O Uwague](mailto:Peace.O.Uwague); [rds116@chrysler.com](mailto:rds116@chrysler.com); [ghall12@jaguarlandrover.com](mailto:ghall12@jaguarlandrover.com); [rbarre20@volvocars.com](mailto:rbarre20@volvocars.com); [Beth Borland](mailto:Beth.Borland); [Mark M Poll](mailto:Mark.M.Poll); [christopher.cislo@gm.com](mailto:christopher.cislo@gm.com); [ross.gatzke@porsche.us](mailto:ross.gatzke@porsche.us); [balsip@suz.com](mailto:balsip@suz.com); [Lindsey Jeng](mailto:Lindsey.Jeng)

**Cc:** [Dave Barker](mailto:dave.barker); [peter\\_meier@ahm.honda.com](mailto:peter_meier@ahm.honda.com); [tom.beierschmitt@tema.toyota.com](mailto:tom.beierschmitt@tema.toyota.com); [David Robertson](mailto:David.Robertson); [david.patterson@na.mitsubishi-motors.com](mailto:david.patterson@na.mitsubishi-motors.com); [yamaday@ntcna.nissan-usa.com](mailto:yamadaya@ntcna.nissan-usa.com); [oliver.schmidt@vw.com](mailto:oliver.schmidt@vw.com); [Andrea.Antholzner@bmwna.com](mailto:Andrea.Antholzner@bmwna.com); [vvarjabe@jaguar.com](mailto:vvarjabe@jaguar.com); [vvarjabe@jaguarlandrover.com](mailto:vvarjabe@jaguarlandrover.com); [brian.fitzgerald@daimler.com](mailto:brian.fitzgerald@daimler.com); [gbuffali@volvocars.com](mailto:gbuffali@volvocars.com); [ml90@chrysler.com](mailto:ml90@chrysler.com); [tfagerma@ford.com](mailto:tfagerma@ford.com); [randall.c.harvey@gm.com](mailto:randall.c.harvey@gm.com); [David Geiger](mailto:David.Geiger); [walter.lewis@porsche.us](mailto:walter.lewis@porsche.us); [luis.hernandez@suz.com](mailto:luis.hernandez@suz.com); [Tony D'Ambrosi](mailto:Tony.D'Ambrosi); [Peavyhouse](mailto:Peavyhouse); [Robert French](mailto:Robert.French); [Roberts Wehrly](mailto:Roberts.Wehrly); [Linc Wright](mailto:Linc.Wright); [DavidA Snyder](mailto:DavidA.Snyder); [Jim Ball](mailto:Jim.Ball); [Joel Anderson](mailto:Joel.Anderson); [Tom Dalton](mailto:Tom.Dalton); [Joel Ott](mailto:Joel.Ott); [William Ott](mailto:William.Ott)

**Subject:** RE: IUVP - Entering Greenhouse Gas data (CREE or OCREE, CH4) into the EPA Verify database; Verify changes, etc.

To all manufacturers IUVP contacts,

Please note that in Verify Release 13.1 (deployed Jan 24, 2014) that EPA has added two new Test Result/Emission Names which can be used in Verify's IUVP Module only. The new test result/emission names are "Combined CREE" and "Combined OPT-CREE."

Please begin using these IUVP emission names as soon as possible (and don't use the work-around method of entering IUVP combined CREE/OCREE data). [Thanks much for using the "work-around" method of entering combined CREE IUVP data over the past few months.] If you used the "work-around method" of entering CREE/OCREE data, it is not necessary to correct previously entered IUVP data using the new test result/emission names.

Please enter the appropriate Combined CREE or Combined OPT-CREE test results along with the appropriate Combined CREE or Combined OPT-CREE in-use standard, pass/fail results, etc. for the highway test only. As a reminder, individual in-use GHG standards for specific in-use vehicles are required to be included in the manufacturer's final CAFE/GHG model year report, ref. 40 CFR 86.1818-12(d); and 40 CFR 600.512-12(c)(11).

As of the first week in January, 2014, some manufacturers have not been entering CREE/OCREE data and/or CH4 data into Verify for 2012 IUVP tests. In addition, some manufacturers seem to be missing 2012 low mileage IUVP data for some of their 2012 test groups. Please double check on the status of your 2012 IUVP program and let Bill Pidgeon ([pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)) and I know if your program is running late. I will try to send manufacturers with missing data a follow-up email message in the next few days.

Tips for entering IUVP data:

1. Please enter Combined CREE or Combined OPT-CREE test results (weighted 55% city and 45% highway) for the highway test procedure only.
2. Please do not enter both Combined CREE and Combined OPT-CREE values. Enter either CREE or OPT-CREE values which are consistent with the way you submitted data in your CAFE/GHG model year report for the applicable model year.
3. Please enter CH4 test results, standards, pass/fail results on the FTP test only.
4. Please enter N2O test results, standards, pass/fail results on the FTP test only if you actually measured N2O---e.g. don't enter the default 0.010 N2O values.

Reminders:

1. 2012 IUVP low mileage testing was required to be completed by Dec 31, 2013 and data submitted to EPA's Verify database prior to Jan 31, 2014, ref. 40 CFR 86.1845-04(b)(4) and 86.1847(b). EPA has extended the window in Verify to Feb 28, 2014 for reporting and correcting 2012 model year low mileage IUVP test data. Please contact Bill Pidgeon by email or at 734-214-4416 if you need to submit data to Verify after that date.
2. When entering IUVP data in Verify, please check your Verify mailbox to make sure that the data was accepted by Verify.

Thanks much.

Please call contact me at 734-214-4450 or by email if you have any questions.

Dave



**To:** Wright, DavidA[Wright.DavidA@epa.gov]  
**From:** Glodich, Jeffrey (J.M.)  
**Sent:** Tue 3/18/2014 1:00:20 PM  
**Subject:** FW: J3066 Task Force

Another member for J3066...

**From:** William Beggs [mailto:william.beggs@gm.com]  
**Sent:** Sunday, March 16, 2014 7:45 PM  
**To:** Glodich, Jeffrey (J.M.)  
**Subject:** RE: J3066 Task Force

Jeff,

Please go ahead and put me down for participation in the J3066 team.

Thanks,

Bill Beggs

**From:** Glodich, Jeffrey (J.M.) [mailto:jglodich@ford.com]  
**Sent:** Tuesday, March 04, 2014 9:02 AM  
**To:** Andrew Ramos; Beierschmitt, Thomas (T.A.); 'Berg, Olle ()'; 'Bob Maxwell'; 'Carl Paulina'; Chris Nevers; 'chris.mccarthy@gm.com'; [david.woods@chrysler.com](mailto:david.woods@chrysler.com); 'Dennis Pawlak'; 'Douglas Reid'; 'Duoba, Mike'; Glodich, Jeffrey (J.M.); 'Jeff Foor'; [Jenny.Sigelko@vw.com](mailto:Jenny.Sigelko@vw.com); [JNIKEUS@volvocars.com](mailto:JNIKEUS@volvocars.com); Kyle Bedsole; 'Mahmoud Yassine'; 'Marc Belzile'; 'Meyer, Norm'; Okawa, Naoyasu (N.); Peabody, Jason (J.A.); 'RMiller@hatci.com'; 'Schlueter, Hannah (EASZ/1)'; [sconrad@hatci.com](mailto:sconrad@hatci.com); [Suanne.Thomas@vw.com](mailto:Suanne.Thomas@vw.com); 'takashi\_a\_fujiwara@ahm.honda.com'; 'tom.beierschmitt@tema.toyota.com'; 'tommy\_chang@ahm.honda.com'; William Beggs; 'William Meschievitz'; 'William Ott'; Yuhase, Nicole (L.)  
**Subject:** J3066 Task Force

All,

We are creating a small task force for J3066 On-Board Fuel Consumption Measurement and Reporting Standard that will meet separately from the main LDVP committee. Please let me know if you would like to be included on the roster for these meetings.

Thanks,

Jeff

**Jeff Glodich**

Ford Motor Company  
Vehicle Environmental Regulatory Strategy and Planning  
217-E4 WHQ  
(313) 845-1579

Nothing in this message is intended to constitute an electronic signature unless a specific statement to the contrary is included in this message.

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**To:** Stump, Barbara[Stump.Barbara@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Tue 3/18/2014 1:26:47 PM  
**Subject:** FW: 2015 Lamborghini Huracan EPA FEE Filing Form  
2015 EPA Cert Fees FVGAV05.2NLE to EPA.pdf

Hi Barbara;

I didn't get any confirmation for this payment and the Lamborghini model test group below.  
Could you please look into this and confirm that the payment was received?

Thanks,

Richard

**From:** Thomas, Richard (EEO)  
**Sent:** Monday, March 10, 2014 1:19 PM  
**To:** EPA Certification Fee Filing Forms (fees@epa.gov)  
**Cc:** Stump, Barbara (Stump.Barbara@epa.gov)  
**Subject:** 2015 Lamborghini Huracan EPA FEE Filing Form

Please find attached the EPA Fee Filing form for Lamborghini Huracan test group  
FVGAV05.2NLE, the fee amount of \$28,528 was paid today and will be available in the EPA  
account by the middle of this week.

If you have any questions, please contact me directly.

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326

Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)



U.S. Environmental Protection Agency  
Motor Vehicle and Engine Compliance Program

**On-Highway Fee Filing Form**

For Certification Applications Received in Calendar Year 2014

Manufacturer Name VOLKSWAGEN Group of America, Inc.

Address 3800 Hamlin Road

City/State/Zip Code/Country Auburn Hills, MI 48326

On-Highway Certification Request Type (check one)

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) FEDERAL (\$28,528) | <input type="checkbox"/> HDV EVAP-ONLY (\$563)      |
| <input type="checkbox"/> LDV/LDT/MDPV/HDV (Chassis cert) CAL-ONLY (\$15,077)           | <input type="checkbox"/> HDE CALIF-ONLY (\$563)     |
| <input type="checkbox"/> HDE (Engine Dyno cert) FEDERAL (\$38,464)                     | <input type="checkbox"/> MOTORCYCLE (\$1,717)       |
|  | <input type="checkbox"/> LD/MDPV/HDV ICI (\$88,591) |

EPA standard family or test group:

F	V	G	A	V	0	5	.	2	N	L	E
---	---	---	---	---	---	---	---	---	---	---	---

Amount paid (U.S. Funds Only):

\$ 28,528.00

Enter the check number, or the statement "WIRE" or "ACH":

EFT

Reduced Fee Section (40 CFR §1027.120)

Reduced fee calculation (minimum initial payment \$750): Total number of vehicles/units covered: \_\_\_\_\_

Aggregate retail sales price of the vehicles/units: \$ \_\_\_\_\_ x 1% = \$ \_\_\_\_\_

Check box if an Independent Commercial Importer: ☐ List the VIN of imported vehicles/engines below:


Company Representative: Richard E. Thomas

Signature: \_\_\_\_\_

**Ex. 6**

Title: Emission Cert Stratagist Phone/Fax: 248 754 4213 / 248 754 4207 Date: 02/26/2014

E-mail Address: Richard.Thomas@VW.com

**Submission of payments and forms:**

- (1) Online: Forms may be found and submitted with or without payments online at [www.Pay.gov](http://www.Pay.gov).
- (2) By mail: For check payments only, send checks and this form to:

**Environmental Protection Agency**  
**Motor Vehicle and Engine Compliance Program**  
P.O. Box 979032  
St. Louis, MO 63197-9000

- (3) Transmit offline Wire payments to the New York Federal Reserve Bank. (See Instructions, p.2)
- (4) Transmit offline ACH payments to the Federal Reserve Bank of Cleveland. (Instructions, p.2)
- (5) Forms not submitted under (1) and (2) above can be sent as email attachments to [Fees@epa.gov](mailto:Fees@epa.gov). Forms and payments sent in ways other than the above may be delayed or ineffective. See the Instructions for sending checks and forms by private mail service (e.g., Federal Express).

The public reporting and recordkeeping burden for this collection of information is estimated to average 18 minutes per response. Send comments on EPA's need for this information, the accuracy of the provided burden estimate, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques, to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., N.W., Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed Form 3520-29 to this address.

This form expires: 10/31/2016

**To:** Cohen, Janet[cohen.janet@epa.gov]  
**From:** Greuel, Justin  
**Sent:** Tue 3/18/2014 2:25:45 PM  
**Subject:** RE:

Forgot about that. Sorry. Will note for the future.

Thanks,

Justin

**From:** Cohen, Janet  
**Sent:** Tuesday, March 18, 2014 8:55 AM  
**To:** Greuel, Justin  
**Subject:** RE:

Thanks Justin, I'll make these changes. In future, more efficient all around if you could just edit the document on the share drive. Thanks again. –j. -

**From:** Greuel, Justin  
**Sent:** Tuesday, March 18, 2014 8:54 AM  
**To:** Cohen, Janet  
**Subject:** RE:

See my edits below.

Thanks,

Justin

**From:** Cohen, Janet  
**Sent:** Monday, March 17, 2014 9:41 AM  
**To:** Greuel, Justin  
**Subject:**

Justin,

Byron wants to send Chris a combined January-February highlights document. Here's what's in there now based on the materials you prepared on the spreadsheets, etc. Does this look right?

**Ex. 5**

**Ex. 5**



**To:** Bunker, Byron[bunker.byron@epa.gov]  
**From:** Transport Topics  
**Sent:** Tue 3/18/2014 5:15:00 PM  
**Subject:** TT Express: February Truck Tonnage Rises 3.6%

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March 18, 2014

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**IN THIS ISSUE:**

**February Truck Tonnage Rises 3.6%**

**February Class 8 Sales Up 11%**

**Diesel Slides 1.8¢ to \$4.003 a Gallon; Gasoline Continues to Climb  
And more...**

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**February Truck Tonnage Rises 3.6%**

**Truck tonnage rose 3.6% in February from same month last year, despite continuing winter weather challenges, American Trucking Associations reported.**

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**U.S. retail heavy-duty truck sales rose 11.2% to 13,949 units in February, the highest percentage gain in four months, WardsAuto.com reported.**

**This week's cartoon: "Happy St. Patrick's Day"**

**Scroll down for more stories.**

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**Con-way Freight to Increase Rates 5.4%**

**Con-way Freight said it will raise its less-than-truckload rates 5.4%, effective March 31.**

**Plans for New Columbia River Bridge Between Ore. and Wash. on Hold**

**After decades and millions of dollars spent in the planning stages, the effort to build a new bridge over the Columbia River between Portland, Ore., and Vancouver, Wash., has come to a halt due to a lack of funding.**

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**National Transportation Safety Board Chairman Deborah Hersman will leave the independent federal agency she has led for five years to become president of the National Safety Council, a nonprofit research and advocacy organization.**

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Road, Suite 210, Arlington, VA 22203.

To: Wehrly, Linc[wehrly.linc@epa.gov]  
From: Transport Topics  
Sent: Tue 3/18/2014 5:15:00 PM  
Subject: TT Express: February Truck Tonnage Rises 3.6%

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Road, Suite 210, Arlington, VA 22203.

**To:** [Ex. 7]@vw.com]

**Cc:** [Ex. 7]

[Ex. 7]

**From:** Snyder, Jim

**Sent:** Tue 3/18/2014 8:15:36 PM

**Subject:** RE: Request for Approval letters - 2015 2.0L TDI

Thanks for the heads up.

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

**From:** [Ex. 7]@vw.com]

**Sent:** Tuesday, March 18, 2014 3:34 PM

**To:** Snyder, Jim

**Cc:** [Ex. 7]

**Subject:** Request for Approval letters - 2015 2.0L TDI

Hello Jim,

I want to bring to your attention two Request for Approval letters recently uploaded to Verify related to the upcoming and new I-4 2.0L TDI Diesel engine with SCR, planned for 2015 certification as test group FVGAV02.0VAL. The first letter is for approval of the SCR system and AECD's. The second letter is for approval of the PM Trap Regeneration adjust factors. I have attached copies of these letters for your convenience. Please contact myself or Len Kata if there any questions.

Regards,

**Ex. 7**

VOLKSWAGEN GROUP OF AMERICA, INC.

Engineering and Environmental Office

**Ex. 7**

**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Wed 3/19/2014 12:45:37 PM  
**Subject:** 2015 Audi Fuel Economy

Hi Dave;

For your information, I just added four new 2015 Audi brand fuel economy labels to Verify and corrected the unadjusted unrounded highway and combined CO2 values for the 2014 Audi Q5 (TDI) index# 014. I think you said you were going to review the 2015 labels this week, so I would like to see your audit, if you run it. Have a good day.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Wright, DavidA[Wright.DavidA@epa.gov]  
**From:** Glodich, Jeffrey (J.M.)  
**Sent:** Wed 3/19/2014 1:55:53 PM  
**Subject:** FW: J3066 Task Force

Another...

**From:** Ryan McGavock [mailto:DRM202@chrysler.com]  
**Sent:** Wednesday, March 19, 2014 9:45 AM  
**To:** Glodich, Jeffrey (J.M.)  
**Cc:** Jeff Foor  
**Subject:** RE: J3066 Task Force

Mr. Glodich,

I would like to participate in the SAE J3066 task force. Please add me to the roster.

Thanks,

Ryan McGavock

Fiat Chrysler Automobiles

Performance & Fuel Economy Testing

Chelsea Proving Grounds

+1 (734) 475-5441

**From:** Jeff Foor  
**Sent:** Tuesday, March 04, 2014 9:10 AM  
**To:** Ryan McGavock  
**Subject:** FW: J3066 Task Force



**From:** Glodich, Jeffrey (J.M.) [<mailto:jglodich@ford.com>]

**Sent:** Tuesday, March 04, 2014 9:02 AM

**To:** [andrew.ramos@gm.com](mailto:andrew.ramos@gm.com); Beierschmitt, Thomas (T.A.); 'Berg, Olle ( )'; 'Bob Maxwell'; 'Carl Paulina'; Chris Nevers; 'chris.mccarthy@gm.com'; David Woods; 'Dennis Pawlak'; 'Douglas Reid'; 'Duoba, Mike'; Glodich, Jeffrey (J.M.); Jeff Foor; [Jenny.Sigelko@vw.com](mailto:Jenny.Sigelko@vw.com); [JNIKEUS@volvocars.com](mailto:JNIKEUS@volvocars.com); [kyle.bedsole@gm.com](mailto:kyle.bedsole@gm.com); Mahmoud Yassine; 'Marc Belzile'; 'Meyer, Norm'; Okawa, Naoyasu (N.); Peabody, Jason (J.A.); 'RMiller@hatci.com'; 'Schlueter, Hannah (EASZ/1)'; [sconrad@hatci.com](mailto:sconrad@hatci.com); [Suanne.Thomas@vw.com](mailto:Suanne.Thomas@vw.com); 'takashi\_a\_fujiwara@ahm.honda.com'; 'tom.beierschmitt@tema.toyota.com'; 'tommy\_chang@ahm.honda.com'; William Beggs <[william.beggs@gm.com](mailto:william.beggs@gm.com)>; 'William Meschievitz'; 'William Ott'; Yuhase, Nicole (L.)

**Subject:** J3066 Task Force

All,

We are creating a small task force for J3066 On-Board Fuel Consumption Measurement and Reporting Standard that will meet separately from the main LDVP committee. Please let me know if you would like to be included on the roster for these meetings.

Thanks,

Jeff

**Jeff Glodich**

Ford Motor Company  
Vehicle Environmental Regulatory Strategy and Planning  
217-E4 WHQ  
(313) 845-1579

**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Wed 3/19/2014 2:31:47 PM  
**Subject:** RE: 2015 Audi Fuel Economy

Richard,

I sent the 2015 FE Label update to DOE yesterday. I'm working on 2014 today. I'll run a new 2015 query Thurs or Fri and let you know if you have any errors.

Can you send me the corrected values for 2014 Index 14?

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Wednesday, March 19, 2014 8:46 AM  
**To:** Good, David  
**Subject:** 2015 Audi Fuel Economy

Hi Dave;

For your information, I just added four new 2015 Audi brand fuel economy labels to Verify and corrected the unadjusted unrounded highway and combined CO2 values for the 2014 Audi Q5 (TDI) index# 014. I think you said you were going to review the 2015 labels this week, so I would like to see your audit, if you run it. Have a good day.

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Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Wed 3/19/2014 2:38:20 PM  
**Subject:** RE: 2015 Audi Fuel Economy

Dave;

The correction to the 2014 label index #014 was only the unadjusted unrounded highway and combined values and does not affect the 5-cycle method calculated combined CO2 label value. The highway unadjusted CO2 value is now 231.0 and the combined unadjusted unrounded is now 295.4 g/mi. Is this what you wanted?

RET

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Wednesday, March 19, 2014 10:32 AM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: 2015 Audi Fuel Economy

Richard,

I sent the 2015 FE Label update to DOE yesterday. I'm working on 2014 today. I'll run a new 2015 query Thurs or Fri and let you know if you have any errors.

Can you send me the corrected values for 2014 Index 14?

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Wednesday, March 19, 2014 8:46 AM  
**To:** Good, David

**Subject:** 2015 Audi Fuel Economy

Hi Dave;

For your information, I just added four new 2015 Audi brand fuel economy labels to Verify and corrected the unadjusted unrounded highway and combined CO2 values for the 2014 Audi Q5 (TDI) index# 014. I think you said you were going to review the 2015 labels this week, so I would like to see your audit, if you run it. Have a good day.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Wed 3/19/2014 4:42:02 PM  
**Subject:** RE: 2015 Audi Fuel Economy - Thanks; NNTO

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Wednesday, March 19, 2014 10:38 AM  
**To:** Good, David  
**Subject:** RE: 2015 Audi Fuel Economy

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**To:** Good, David  
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Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Thur 3/20/2014 1:53:32 PM  
**Subject:** RE: 2014 Bentley Label Correction

Richard,

Next week I plan to add an error check of the CO2 values using the 8887 and 10180 factors (+/- 5%) to the macro. I don't think the error check would have caught that one.

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Thursday, March 20, 2014 8:31 AM  
**To:** Good, David  
**Subject:** 2014 Bentley Label Correction

Hi Dave;

I found an error in my CO2 calculation for the 2014 Bentley Continental GT with 4.0L V8, index #026. I made the correction this morning in Verify. The label CO2 value decreases from 488 to 485 g/mi.

Has there been any further changes to Verify or your audit program that would compare the calculated label model type combined MPG value into label CO2 value using the gasoline 8887 and the 10180 factor for Diesel fuel?

Please let me know if you need anything else.

Thanks,



Richard

*Richard E. Thomas*

VOLKSWAGEN Group of America, Inc.

3800 Hamlin Road

Auburn Hills, MI 48326

Engineering and Environmental Office (EEO)

Phone: 248 754-4213

Fax: 248 754-4207

[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** D'Ambrosi, Anthony[ADAmbrosi@hatci.com]  
**Bcc:** Yang, Ching-Shih[Yang.Ching-Shih@epa.gov]  
**From:** Pidgeon, Bill  
**Sent:** Thur 3/20/2014 2:27:50 PM  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence  
CY2013 Hyundai IUVP Data Request 2014 0314.xlsx

Hi Tony,

The data you requested is attached.

Best wishes,

Bill

\*\*\*\*\*

William M. Pidgeon  
Mechanical Engineer  
U.S. Environmental Protection Agency  
Compliance Division, N69  
2000 Traverwood Drive  
Ann Arbor, MI 48105-2195  
pidgeon.bill@epa.gov

Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [mailto:ADAmbrosi@hatci.com]  
**Sent:** Friday, March 14, 2014 9:42 AM  
**To:** Pidgeon, Bill  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill ... Ugghhh - I hope that forecast is wrong!

Are you (EPA) able to provide other OEM's IUVP test data for 2013CY?

I don't know if it's possible, but we'd be interested in 13CY data for Toyota, Honda, GM, Ford and VW.

Please advise.

Thanks and have a great weekend!

Tony

**From:** Pidgeon, Bill [<mailto:pidgeon.bill@epa.gov>]  
**Sent:** Thursday, March 13, 2014 4:22 PM  
**To:** D'Ambrosi, Anthony  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Thanks for the update Tony. I heard someone say that snow is in the forecast for next week...

Bill

\*\*\*\*\*

William M. Pidgeon  
Mechanical Engineer  
U.S. Environmental Protection Agency  
Compliance Division, N69  
2000 Traverwood Drive  
Ann Arbor, MI 48105-2195  
[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Thursday, March 13, 2014 2:14 PM  
**To:** Pidgeon, Bill  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill,

We were able to procure that gentleman's vehicle. It will be back in mid-April for a retest.

FYI – the customer is elderly and wanted to wait until the weather warmed up (note at this rate – it could mean no retest until June ☺)

Thanks,  
Tony

**From:** Pidgeon, Bill [<mailto:pidgeon.bill@epa.gov>]  
**Sent:** Tuesday, March 04, 2014 2:40 PM  
**To:** D'Ambrosi, Anthony  
**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Tony,

Thanks for the update.

Best wishes,

Bill

\*\*\*\*\*

William M. Pidgeon  
Mechanical Engineer  
U.S. Environmental Protection Agency  
Compliance Division, N69  
2000 Traverwood Drive  
Ann Arbor, MI 48105-2195

[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416

Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]

**Sent:** Monday, March 03, 2014 2:27 PM

**To:** Pidgeon, Bill

**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Bill,

Thanks for the feedback. We are going to try to procure this customer's vehicle again and re-run the test.

If we have trouble, I will let you know.

Best Regards,

Tony

**From:** Pidgeon, Bill [<mailto:pidgeon.bill@epa.gov>]

**Sent:** Friday, February 28, 2014 1:42 PM

**To:** D'Ambrosi, Anthony

**Subject:** RE: IUVP ORVR/EVAP Test Sequence

Hi Tony,

Sorry for the delay – I'm not very familiar with the ORVR test.

§86.157-98(d)(3) says:

“The fuel flow shall continue until the amount of fuel dispensed is at least 85 percent of nominal fuel tank capacity, determined to the nearest one-tenth of a U.S. gallon (0.38 liter).”

So, your ORVR test is explicitly a void test. However, if you would like to argue that in this particular test, the mistake led to a more stringent test, I'm open to evidence and logic. If not, you'll have to void the test.

Best wishes,

Bill

\*\*\*\*\*

William M. Pidgeon  
Mechanical Engineer  
U.S. Environmental Protection Agency  
Compliance Division, N69  
2000 Traverwood Drive  
Ann Arbor, MI 48105-2195  
[pidgeon.bill@epa.gov](mailto:pidgeon.bill@epa.gov)

Phone: 734-214-4416  
Fax: 734-214-4869

**From:** D'Ambrosi, Anthony [<mailto:ADAmbrosi@hatci.com>]  
**Sent:** Thursday, February 27, 2014 10:22 AM  
**To:** Pidgeon, Bill  
**Cc:** Horton, John  
**Subject:** IUVP ORVR/EVAP Test Sequence

Hi Bill,

It was nice talking to you today.

Please see details of the test we discussed below.

The tested vehicle is a 2012MY 2.4L Optima and during the ORVR / 2-Day Evap test sequence, we were unable to refill the vehicle to at least 85% capacity.

- Tank volume is 18.5 gallons (85-95% → 15.7 – 17.5 gal).
- The vehicle could only be refueled to 14.7 gallons (~ 80%).
- The vehicle completed the test sequence and passed all applicable ORVR/Evap standards.
- The following day, we completely drained the vehicle and re-fueled this vehicle with the following results:

1st shut-off = 17.5 Gal.

2nd shut-off = 17.7 Gal.

3rd shut-off = 18.0 Gal. With Spit-Back.

As we discussed, the decision is whether to treat this test as valid (return car to customer) or VOID (conduct retest of ORVR/Evap).

If you could kindly provide your thoughts, it would be greatly appreciated.

Thanks!

Best Regards,

Tony

**Tony D'Ambrosi**  
**Senior Manager**

Office : (734) 337  
2231

Cell : (734) 890



**Certification and Compliance**

6470

**Hyundai-Kia America Technical Center,  
Inc.**

E-mail:

[adambrosi@hatci.com](mailto:adambrosi@hatci.com)

**6800 Geddes Rd, Superior Twp., MI  
48198**

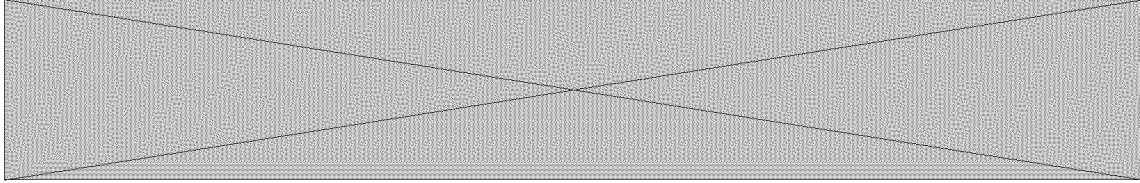




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**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Thur 3/20/2014 4:05:40 PM  
**Subject:** Green Car Report Daily Headlines

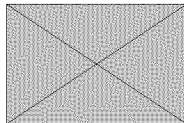
Email not displaying correctly? [View it in your browser.](#)



The latest from your friends at GCR:

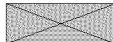
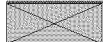
## **VW e-Golf Drive Report, Tesla In Arizona, Used Honda Insight Guide: Today's Car News**

Mar 20, 2014 03:54 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



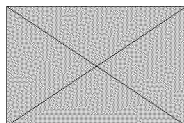
Today on Green CarReports: We drive VW's first electric car to be sold in the U.S., run down what you need to know if you want to buy an early Honda Insight, and dig deeper into GM's new and more fuel-efficient engines. All this and more on Green Car Reports. Last week, we drove the Volkswagen e-Golf for two hours in Berlin--and now we've written...

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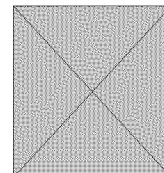
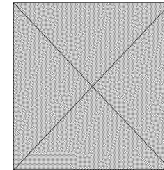
## **GM's New 3- And 4-Cylinder Engines Face Off Against Ford, VW**

Mar 20, 2014 02:04 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



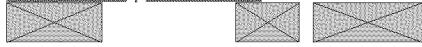
Yesterday's announcement by General Motors that it would launch a new line of three- and four-cylinder Ecotec engines for better fuel economy was short on some details. Notably, the carmaker only gave two examples of future cars they would power--and even

More ways to follow us:



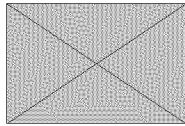
declined to identify the three existing engine lines that would be replaced by the new...

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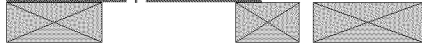
## Good News For Tesla: AZ Bill Would Legalize Direct Sales As State Angles For Gigafactory

Mar 20, 2014 12:02 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



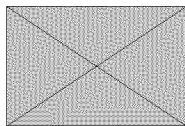
When the possibility of new jobs clashes with the desires of powerful campaign contributors, sometimes jobs can take priority. That may be what's happening in Arizona, where a new bill in the state legislature would legalize the direct-sales model of electric-car maker Tesla Motors--to the intense dismay of state car dealers who want it made...

[comments](#) | [read more](#)



## Buying A Used 2000-2006 Honda Insight Hybrid: The Guide

Mar 20, 2014 11:56 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



If you've been reading Green Car Reports over the past week, you might have seen we recently bought a 2001 Honda Insight--an example of one of the first hybrids sold by a major automaker. But what if you want to buy your own early Insight? What do you need to look out for? And more importantly, should you buy one over a 2001-2003 Toyota Prius--the...

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Menlo Park, CA 94025

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**Ex. 6**

**From:** Ball, Joel  
**Sent:** Thur 3/20/2014 4:06:53 PM  
**Subject:** RE: Audi - Catalytic Converter

Hello **Ex. 6**

Yes, it is possible that the oil consumption on your vehicle contributed to the catalyst fault code that was set on your vehicle. Oil contains Phosphorus which can “poison” a catalytic converter. Excessive oil consumption over a period of time could potentially damage a catalytic converter. I cannot say for sure what caused the catalyst fault code on your vehicle but it is possible that the oil consumption was a factor.

Joel Ball  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4238  
ball.joel@epa.gov

**From:** **Ex. 6**  
**Sent:** Friday, March 14, 2014 11:16 AM  
**To:** Ball, Joel  
**Subject:** RE: Audi - Catalytic Converter

Dear Joel –

Thanks for getting back to me.

I wanted to point out that the car I drive, the 2009 Audi A4, burns a significant amount of oil. According to Audi there is normal oil consumption for these engines but mine at times would drink 1 quart of oil in less than 500 miles – this is not uncommon!

<http://www.audizine.com/forum/showthread.php/383430-THE-B8-A4-Oil-Consumption-Thread>

Is it possible that this level of oil consumption could damage the cat? I think this could be a major issue that Audi is ignoring because when I brought up the issue regarding my oil consumption, they replaced my faulty pistons (not the cat).

I know Germans are really careful about the environment, so I don't think Audi would intentionally do this but I was curious so I thought I'd ask.

**From:** Ball, Joel [mailto:ball.joel@epa.gov]  
**Sent:** Friday, March 14, 2014 9:56 AM  
**To:** [REDACTED] Ex. 6  
**Subject:** RE: Audi - Catalytic Converter

Hello [REDACTED] Ex. 6

Thank you for your inquiry regarding the federally required emissions warranty. The Clean Air Act requires manufacturers of light duty vehicles to warranty the catalytic converters for 8 years or 80,000 miles. The procedure for making a claim is to bring the vehicle to a manufacturer authorized repair facility (dealership) and give them the opportunity to diagnose the problem before making the repair. If the dealership has a reason that they diagnose the issue as something other than the catalyst then they should repair that part (which might not be covered under warranty).

However, from what you have told me, it does not sound like they have done a proper diagnosis (simply clearing the codes and waiting to see if they return.) I have received complaints from other people in your situation that had the fault code return after the 80,000 mile limit was exceeded, then the dealership denied the warranty based on the mileage. I recommend you contact the Audi customer service department and explain the situation. Ask them to repair your vehicle under warranty or provide a written explanation of why the warranty claim is being denied. The following web page provides more information regarding the federal emissions warranty requirements: [www.epa.gov/obd/pubs/420f09048.pdf](http://www.epa.gov/obd/pubs/420f09048.pdf)

I hope this information is helpful.

Joel Ball  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4238  
[ball.joel@epa.gov](mailto:ball.joel@epa.gov)

**From:** LaCroix, John  
**Sent:** Wednesday, March 12, 2014 6:06 AM  
**To:** Ball, Joel  
**Subject:** FW: Audi - Catalytic Converter

Joel,

Here's a good one for a snowy day.

John

**From:** Ex. 6  
**Sent:** Tuesday, March 11, 2014 6:52 PM  
**To:** LaCroix, John  
**Subject:** Audi - Catalytic Converter

Hi John –

I am having some trouble at audi. I received a Catalytic Converter check engine for my Audi A4 which has 79,500 miles. The dealer refuses to replace it and tells me that they will reset the light and I must return to the dealership if it comes on again, and then they will replace the Cat.

I just wanted to see if this is the right process.

Thanks,

**Ex. 6**



**To:** [redacted] Ex. 6; Wysor, Tad[wysor.tad@epa.gov]; Coryell, Mark[coryell.mark@epa.gov]; Wright, DavidA[Wright.DavidA@epa.gov]; [redacted] Ex. 6  
**From:** Alson, Jeff  
**Sent:** Thur 3/20/2014 6:53:42 PM  
**Subject:** 6 articles/columns on UAW/VW vote from Automotive News  
[Auto News-UAW-Feb. 24.docx](#)

I was catching up on some old copies of Automotive News, which sometimes takes a surprisingly neutral (or even positive) spin on automotive policy matters, and found 6 (!) pieces on the UAW/VW vote in the Feb. 24 issue: two front-page articles with some history that I did not know, two editorials, and two opinion columns. I thought some or all of you might be interested. If any of you have found even more in-depth histories or analyses, please pass them on to the rest of us.

Jeff

## 4 key VW decisions shaped vote's course

(Front page article— Gabe Nelson)

CHATTANOOGA -- From Washington to Wolfsburg, the UAW's failed organizing drive made for exciting political theater. But on the grounds of the Volkswagen plant here, it was about as friendly as it gets.

A week before the balloting, Sean Moss, a 45-year-old quality inspector in the assembly shop, stood outside the plant, braving a midwinter chill to hand out anti-union leaflets. Next to him, a line worker handed out fliers in support of the UAW.

"I said to him, 'We should be doing this in July,'" Moss said. "It was so cold. And we just laughed about it."

The odd comity between supporters and opponents of the UAW reflected the way the election and its outcome came to be, born not out of protests or battles on the overpass, but out of a shared objective -- a voice for workers in improving their prospects at the factory -- and a deep disagreement about how to achieve that.

And while the political winds and rhetoric swayed the headlines over the past few weeks, the course of the organizing effort was determined largely by four pivotal decisions by VW executives, beginning nearly two years ago.

VW's distinctive labor relations practices make it difficult for others in the industry to draw broad lessons from the vote, experts say. But the way VW handled those four turning points illustrates the daunting challenge that the UAW will face as it tries to build bridges to workers and companies outside the Detroit 3.

### **The personnel shuffle**

Workers in Chattanooga started collecting signed cards of support for the UAW in March 2012, and they got almost immediate help from VW.

Frank Patta, secretary general of VW's global works council, came to Chattanooga that June and told workers they could gain from having a German-style works council.

"Of course we will support the UAW; we've said that all along," Reuters quoted global council chief Bernd Osterloh as saying at the time. "But there's one thing we cannot do. We can't take workers at VW Chattanooga by the hand when it comes to voting."

That same month, VW announced the retirement of Don Jackson, president of manufacturing at Volkswagen of America. Jackson had joined VW in 2008 from Toyota, where he had just opened the nonunion truck plant in San Antonio. While at VW, he made no secret of his dislike of unions.

"I've been able to work without a third party or a union for over 34 years," Jackson said last year at an anti-UAW gathering in Chattanooga, according to a video recording of the event posted online. "I'm very proud of that. And I believe it's the proven path for our success in the future."

The circumstances around his departure remain unclear. But to UAW friends and foes, the changing of the guard was a sign VW would not resist the union drive.

In January 2013, VW sent another signal by appointing a new head of human resources in Chattanooga. He came from VW's plant in Braunschweig, Germany. His name was Sebastian Patta -- Frank Patta's brother.

### **A 'natural partner'**

The company gave the union drive another boost last year when Horst Neumann, board member for human resources at Volkswagen AG, dropped a bombshell on the U.S. media. VW had concluded a union was needed under U.S. law to set up a works council, Neumann said, and was in talks with the UAW to do it.

The conclusion that a union was needed for the works council was all but dictated by U.S. law, says Steve Silvia, a professor at American University who specializes in labor relations. But the choice to engage with the UAW wasn't so easy. VW could have set up a works council with any union -- even one created by its workers. Yet the company concluded that "the UAW would be the natural partner," as Neumann put it.

After all, from 1978 to 1988, when VW took its first crack at building cars in the United States, in Westmoreland, Pa., the UAW represented the workers.

With this stamp of approval, the UAW campaigned all summer in Chattanooga alongside its German counterpart, IG Metall. One event, held in June at an International Brotherhood of Electrical Workers union hall, drew about 50 people, most of them plant workers and relatives.

UAW President Bob King and Horst Mund, head of IG Metall's international program, spoke as attendees lunched on fried chicken, potato salad and cookies.

"I can tell you today: We're very, very close," UAW Region 8 Director Gary Casteel told workers, saying the question would soon be how, not if, VW would recognize the UAW. Mund urged Chattanooga workers not to be the "odd man out," since VW had works councils at nearly all its global plants.

The next month, workers at the plant crossed an important threshold: They held signed cards in support of the UAW from a majority of eligible workers at the plant.

### **The secret ballot**

At this point, the UAW could have gone straight to the National Labor Relations Board and asked for an election. But the UAW wanted VW to recognize the union based on the card count alone, without an election.

An opportunity arrived on Aug. 30, when executives from Volkswagen AG, the global works council and the UAW met at VW headquarters in Wolfsburg.

But the company, concerned about antagonizing Republican politicians in Tennessee, did not oblige. Days after the meeting, Volkswagen Group of America CEO Jonathan Browning announced that VW would insist upon a "formal vote."

"This way, there would be no question about whether this was snuck in through the back door," Silvia, the American University professor, said. "The employees made the decision -- not the company."

In the lead-up to the election, UAW supporters thought they had 70 to 80 percent of workers on their side, says Justin King, 30, who fixes electronic glitches in cars at the plant and was a key UAW organizer. And yet, when the votes were counted, the UAW ended up losing 53 to 47 percent, with nearly 90 percent turnout.

"That's the absolutely mind-boggling, jaw-dropping thing about that election," says Jefferson Cowie, a labor historian at Cornell University. "It's a chilling signal to the entire labor movement."

### **The neutrality deal**

Volkswagen's caution didn't end with its call for a secret ballot. In preparation for the Feb. 12-14 election, the UAW and VW signed a 22-page "neutrality agreement," dated Jan. 27, giving the UAW permission to speak to workers at the plant before the election.

In exchange for this access, the union made a number of promises, including a vow that if workers voted for the UAW, union negotiators would protect VW's "cost advantages" compared with U.S. rivals.

Critics of the UAW cited this as proof that workers couldn't expect a bump in pay and benefits by aligning with the union.

The deal itself may not have swayed workers; they may not have even known it existed. Yet it underscored one of the UAW's biggest challenges. By pledging cooperation with VW, the union may have undercut exactly what makes it attractive to workers, Cowie says.

People across the U.S. labor movement have scrutinized this decision since the election, suggesting that the emphasis on cooperation between union and management, a hallmark of the German works council model, may be a deeply flawed organizing strategy in the United States.

The wording of the deal suggested that the UAW "didn't have a lot to offer besides the works council," Cowie says. "If they're not going to bargain hard for wages, then what are the workers going to get?"

Under the neutrality deal, the union agreed that if it lost, it would suspend organizing efforts for one year. But this is not the end of the UAW's campaign.

Its hopes rest on winning over more workers like Richard Isbell, a 33-year-old employee in the VW plant's repair shop. Hours before the vote tally was released, Isbell was eager to hear the results -- but it was also Valentine's Day; he was going to take his wife out to dinner and give her a gift certificate for a massage.

The gift certificate cost Isbell \$40, about two hours of wages -- the equivalent of a month's UAW dues. This is not pocket change in the Isbell household, so he had to lie to his wife, saying he withdrew the cash for a car stereo.

Isbell said he was willing to join the UAW and pay dues, even if it didn't mean getting a raise. He said he trusts VW when it sings the praises of its works councils.

"I've been working for Volkswagen for almost four years now," Isbell said. "I believe what Volkswagen tells me, because they haven't steered me wrong yet. ... And I want to be part of this works council."

# Labor leaders try to save works council

(Front page article – Gabe Nelson)

CHATTANOOGA -- Now that Volkswagen workers here have turned away the UAW, labor leaders within VW are going back to the drawing board to achieve their broader goal: setting up a works council to give workers a say in corporate decisions.

The struggle to reconcile German labor practices with American laws and political realities could lead workers in Chattanooga to take some bold steps -- such as creating their own union -- to get a voice at Volkswagen AG's headquarters in Wolfsburg.

Whether they succeed may determine how VW, a company with heavy labor influence at the highest levels of management, invests in the United States for years to come.

Works councils, common under German law, allow blue-collar and white-collar workers to vote on workplace conditions. VW has them at all of its other assembly plants outside China and Russia and tends to defer to their local decisions. Each plant also sends delegates to a global works council that influences which products the company makes and where.

Gunnar Kilian, secretary general of VW's global works council, said in a statement last week that he and Frank Patta, another top works council official, will consult U.S. labor law experts over the next two weeks to plan further steps. "We are committed to our goal of establishing a works council in Chattanooga," he said.

Interviews with several Chattanooga workers suggest that the idea is popular, even among people who were skeptical of the union's pitch, such as quality inspector Sean Moss, who helped circulate an anti-UAW petition that garnered more than 600 signatures.

"I haven't heard from anybody in the plant who doesn't want a works council in the plant and to have the seat on the global works council," said Moss, 45. "It's just how we go about getting there."

UAW supporters aren't sure a works council would work without a union. Justin King, who fixes electronics glitches in cars at the plant, said that unless the works council has legal force -- like a union contract -- VW could just ignore its advice.

But King, 30, said he intends to seek out UAW opponents to discuss how a works council might be set up without a union. Until he does that, King said, he will not know "whether they were just trying to shoot the whole process down" by voting against the UAW, "or whether they think there's a way for us to move forward."

## A different union?

If such a council were set up without the UAW, it likely wouldn't arouse the same level of opposition from Republican politicians and anti-union activists.

U.S. Sen. Bob Corker, R-Tenn., who tried to turn workers against the UAW by warning that the union would put a plant expansion at risk, said he primarily opposes the UAW -- not a works council.

The tough question for VW is whether a works council would be legal without a union. In the

past, the automaker has concurred with legal experts who said it would violate U.S. laws against company-dominated unions.

VW and its workers will now rethink their options. One option would be talking with a different union. Another would be moving ahead without a union. Corker said he has suggested that workers in Chattanooga organize their own.

Steve Silvia, a professor of economics and trade at American University in Washington, said workers in Chattanooga could legally set up their own union. The question, he said, is whether that union would win majority support, including strong UAW supporters and strong union critics.

"They can't do it without a union," Silvia said. "But if they create their own union -- which you can do -- and they can get a majority to vote for that union, that could work."

Future investments in North America could hinge on it. Bernd Osterloh, chairman of VW's works council, told the German newspaper *Sueddeutsche Zeitung* last week that if VW executives want to build another U.S. assembly plant, labor leaders "will hardly be able to vote in favor" of building it in the South so long as the workers there aren't represented.

### **With or without UAW**

Under a 22-page agreement with VW dated Jan. 27, the UAW agreed to cease organizing in Chattanooga for a year if it lost the election. But having lost by just 86 votes, the union isn't giving up on what may have been its best chance at organizing a Southern plant, a goal on which departing UAW President Bob King staked his legacy.

"We're not leaving Chattanooga," said Dennis Williams, King's likely successor. "It took seven years to organize Ford, and I will be around for at least another five."

Already, the union has filed an appeal with the National Labor Relations Board seeking a new election, citing improper interference by politicians and outside groups.

Either way, for the UAW's opponents, the clock is running. Mike Burton, a 56-year-old paint shop worker who started the Web site **no2uaw.com** and became a leader of the opposition, said outside groups already have come forward offering free legal help.

"We have 365 days," Burton said, "before the UAW can darken our doors again."

## **At Volkswagen, labor is indeed a full partner** (Opinion column, Page 12)

Especially in an election year, I expect political rhetoric over UAW organizing in the South. This month's rejection of the UAW by workers at Volkswagen's Chattanooga plant certainly garnered lots of words on both sides.

But, frankly, I was shocked by two Southern politicians so eager to score points with local conservative voting bases that they insulted half the board members of the automakers whose U.S. plants they so covet.

In Tennessee, Sen. Bob Corker announced on the first day of the Chattanooga voting that he had been "assured" that VW would award a major new product to the plant if workers rejected the UAW. When Frank Fischer, CEO of VW in Chattanooga, said that was untrue, Corker implied that he knew more than Fischer.

Corker may be exulting that he helped thwart the UAW and, as he might put it, preserve Tennessee as a business-friendly state. But he also thwarted VW's effort to install a works council in Chattanooga.

South Carolina has welcomed nonunion jobs, at BMW's Spartanburg plant, for example. But the Detroit 3 should stay out, Gov. Nikki Haley said last week. "We discourage any companies that have unions from wanting to come to South Carolina because we don't want to taint the water."

Both politicians apparently don't know or don't care that both Volkswagen AG and BMW AG -- by German law -- have supervisory boards with half their members from labor unions.

It's right on the BMW Group Web site: "In accordance with the regulations contained in the German co-determination Act, BMW AG's Supervisory Board shall comprise ten shareholder representatives ... and ten employee representatives."

In Germany's two-board corporate structure, what does the supervisory board do? It appoints the management board and has veto power on any decision to open or close plants.

As managing editor of *Automotive News Europe*, I lived in Germany for five years. Germans take the co-determination act seriously. To them, the law's enforced sharing of power between labor and management is a foundation of their post-war economic miracle -- it's how Germans boot-strapped themselves back to prosperity.

And the poster child, the shiniest example, of co-determination is VW.

VW is about to decide where to build a new SUV in North America. The likeliest scenario: a greatly expanded or new plant in the United States or Mexico.

How did Corker's insistence that he knew VW's intentions better than VW executives go over in Wolfsburg? Not well.

"Another VW factory in the United States, provided that one more should still be set up there, does not necessarily have to be assigned to the South again," said Bernd Osterloh, head of VW's central works council and the de facto labor leader on the supervisory board.

Works councils are already in VW plants all over the world, except Russia, China and Tennessee.

The puzzling part about Haley's remarks is that they weren't provoked. South Carolina won a major auto assembly plant that is not unionized. Why remind BMW board members of that? And why say aloud that labor unions "taint the water"?

Frankly, it's unfair to auto workers in Spartanburg and Chattanooga. They have earned each scrap of trust and new investment from their parent companies through diligence and hard work. They deserve better than for their home state politicians to interfere with the internal operations of their businesses.

# No connection

(Editorial)

The low point of the UAW's effort to organize Volkswagen's Chattanooga assembly plant was Sen. Bob Corker's bombshell on the first day of voting.

The Tennessee Republican said he was "assured" that if workers rejected the UAW, VW would provide a new product to build. He declined to name his source or sources.

VW immediately denied the claim. Frank Fischer, CEO of Volkswagen Chattanooga, said there was no connection between the vote and products for the plant. His response has the ring of truth because VW was neutral on the vote and let UAW representatives into the plant to campaign.

Hiding behind anonymous sources, Corker made a dubious claim to stoke fear of the union. That's dirty pool.

## What does the UAW offer today's workers?

(Editorial)

After its narrow defeat at Volkswagen's Chattanooga plant, the UAW needs to engage in some serious soul-searching.

The vote was close: 626 for the UAW vs. 712 against, a margin of a mere 86 votes. About 165 workers did not vote, implying they didn't care or couldn't make sense of the arguments for or against approving the UAW to represent their interests.

Either way, the number of no voters and nonvoters is a stunning indictment of the UAW's ability to make a convincing case that membership offers enough benefits to an individual worker in an auto assembly plant.

It's time for the UAW to rethink what it's selling.

A good starting point would be this: Membership in a union is entirely voluntary, so joining a union must be based on what it can do for its members today. Appealing to a sense of history -- invoking the UAW's role in building America's middle class or recalling such watershed events as the Battle of the Overpass or the Flint sit-down strike -- is meaningless to 21st century workers.

Quite bluntly, today's worker asks, "What's in it for me?" It's a valid question. And it is telling that the UAW apparently did not have a good enough answer in Chattanooga when VW's position was as neutral -- some would say supportive -- as the UAW is likely to encounter in the South.

There are benefits the UAW could tout, such as its safety expertise. Because the UAW is present in a wide variety of auto factories, its understanding of how to ensure a safe working environment should be at least as deep as management's. Since both management and workers want safer factories, it's an area in which the UAW could showcase its avowed new policy of cooperation rather than confrontation.

There may be other opportunities.



But the leaders at Solidarity House must determine what the UAW offers that workers cannot find elsewhere, acknowledge that benefits trump history and find a way to market those benefits effectively to nonunionized workers. Fail that, and they will have to accept a future in which their union is increasingly irrelevant.

## **VW workers saw little gain in UAW vote**

**(Opinion column by David Barkholz)**

The UAW's cooperative partnership with the Detroit 3 helped the union get an organizing election at Volkswagen in Chattanooga.

But the employer-friendly strategy that gave rise to a pernicious two-tier wage system in 2007 and other Detroit 3 concessions over the past decade proved the union's undoing.

The 1,550 hourly workers at Chattanooga just saw too little to gain for paying dues.

One VW worker voting against the union said UAW-represented auto workers haven't had a wage increase in 10 years. Another did so because he already earns more than two-tier workers -- those new Detroit 3 hires who earn half what veterans do.

For a decade, the UAW has negotiated contracts with an eye toward helping the Detroit 3. The latest was in 2011. Though the carmakers were again profitable and headed for years of strong vehicle sales, the UAW didn't try to win a wage increase or battle the two-tier system.

Instead, President Bob King meekly took additional profit sharing and promised to get tougher in the 2015 round of talks. VW workers noticed.

Political interference didn't cause the defeat. VW management shot down a lie the plant would lose product if the UAW won.

No, the cards in this election were stacked in favor of the UAW and the union still lost. VW was neutral on the vote and let the union campaign in the plant.

Ultimately, all the UAW had to sell were soft concepts such as worker democracy and strong health and safety standards that workers already enjoy.

During the bailouts, concessions were needed, especially an end to the Jobs Bank. But two-tier wages predated the bailouts, and when the current contract ends in 2015, UAW veterans will have endured 12 years without a wage increase.

In short, the UAW has swung the pendulum too far toward cooperative partnership and away from hard-nosed bargaining for members.

For any chance of organizing the transplants, the UAW must reverse that trend.

**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Fri 3/21/2014 12:43:09 PM  
**Subject:** RE: 2014 Bentley Label Correction

Hi Dave;

You don't think the tolerance should be a little tighter than plus or minus 5%? On something like a Bentley model 5% of 488 is about 24 g/mi, three percent would be about 15 g/mi, 2 % would be less than 10 g/mi. Is the 5% coming from the study that Rob French did in January, when he caught a few outliers? In our case, he found two of over one hundred labels I did back then. Let me know what you think about using a lower percentage for your plausibility check.

Best regards,

Richard

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Thursday, March 20, 2014 9:54 AM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: 2014 Bentley Label Correction

Richard,

Next week I plan to add an error check of the CO2 values using the 8887 and 10180 factors (+/- 5%) to the macro. I don't think the error check would have caught that one.

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Thursday, March 20, 2014 8:31 AM  
**To:** Good, David  
**Subject:** 2014 Bentley Label Correction

Hi Dave;

I found an error in my CO2 calculation for the 2014 Bentley Continental GT with 4.0L V8, index #026. I made the correction this morning in Verify. The label CO2 value decreases from 488 to 485 g/mi.

Has there been any further changes to Verify or your audit program that would compare the calculated label model type combined MPG value into label CO2 value using the gasoline 8887 and the 10180 factor for Diesel fuel?

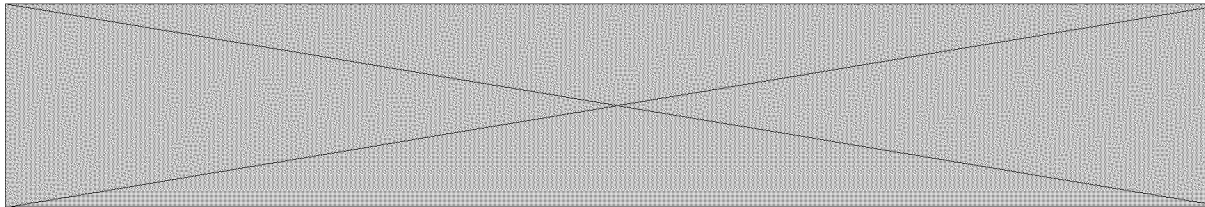
Please let me know if you need anything else.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** WardsAuto World magazine  
**Sent:** Fri 3/21/2014 4:00:52 PM  
**Subject:** Read March Issue Now - Big SUVs are Back!



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Segment is downsized, but not prices

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- **John McElroy's Column: Why Can't UAW Sell Itself?**  
The UAW's failure to organize hourly Volkswagen employees in Chattanooga, TN is a humiliating and strategic failure. In the vote, 53% of the workers rejected the union. Clearly it no longer knows how to connect with

most working-class people. [READ MORE](#)

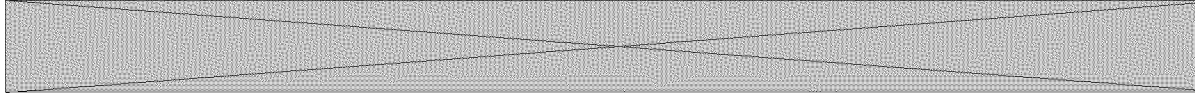
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Drew Winter  
Editor-in-Chief  
WardsAuto World



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**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Fri 3/21/2014 4:05:16 PM  
**Subject:** RE: 2014 Bentley Label Correction

Richard,

I'm just trying to identify gross data input mistakes. If I make the tolerance tighter, I'll come up with a lot of errors (which aren't really errors).

8887 is only approximate---it isn't really correct for Phase II test fuel. Test-to-test variability is approx 3%; etc etc.

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Friday, March 21, 2014 8:43 AM  
**To:** Good, David  
**Subject:** RE: 2014 Bentley Label Correction

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Please let me know if you need anything else.



Thanks,

Richard

*Richard E. Thomas*

VOLKSWAGEN Group of America, Inc.

3800 Hamlin Road

Auburn Hills, MI 48326

Engineering and Environmental Office (EEO)

Phone: 248 754-4213

Fax: 248 754-4207

[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**From:** Snyder, Jim  
**Required Attendees:** Snyder, Jim; Wehrly, Linc; French, Roberts; Wright, DavidA; Dalton, Joel; Kata, Leonard (EEO)  
**Optional Attendees:** Schmidt, Oliver (EEO); Tamborra, Nick (EEO)  
**Location:** AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE  
**Importance:** Normal  
**Subject:** VW phone conference: discuss off-cycle GHG credits  
**Start Date/Time:** Mon 3/31/2014 5:00:00 PM  
**End Date/Time:** Mon 3/31/2014 6:00:00 PM

Hello Jim:

I would like to try again to schedule a VW/EPA conference call to have a preliminary discussion regarding off-cycle GHG credits.

Best regards,

Len

**From:** Snyder, Jim

**Required Attendees:** Wehrly, Linc; French, Roberts; Wright, DavidA; Dalton, Joel;

**Ex. 7**

**Location:** AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE

**Importance:** Normal

**Subject:** VW phone conference: discuss off-cycle GHG credits

**Start Date/Time:** Mon 3/31/2014 5:00:00 PM

**End Date/Time:** Mon 3/31/2014 6:00:00 PM

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Best regards,

**Ex. 7**

**From:** Snyder, Jim

**Required Attendees:** Wehrly, Linc; French, Roberts; Wright, DavidA; Dalton, Joel;

**Ex. 6**

**Location:** AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE

**Importance:** Normal

**Subject:** VW phone conference: discuss off-cycle GHG credits

**Start Date/Time:** Mon 3/31/2014 5:00:00 PM

**End Date/Time:** Mon 3/31/2014 6:00:00 PM

When: Monday, March 31, 2014 1:00 PM-2:00 PM (GMT-05:00) Eastern Time (US & Canada).

Where: AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE

Note: The GMT offset above does not reflect daylight saving time adjustments.

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

Hello Jim:

I would like to try again to schedule a VW/EPA conference call to have a preliminary discussion regarding off-cycle GHG credits.

Best regards,

**Ex. 6**

**From:** Snyder, Jim  
**Required Attendees:** Wehrly, Linc; French, Roberts; Wright, DavidA; Dalton, Joel;  
Kata, Leonard (EEO)  
**Location:** AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE  
**Importance:** Normal  
**Subject:** VW phone conference: discuss off-cycle GHG credits  
**Start Date/Time:** Mon 3/31/2014 5:00:00 PM  
**End Date/Time:** Mon 3/31/2014 6:00:00 PM

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Best regards,

Len

**To:** [Ex. 7]@vw.com]  
**From:** Snyder, Jim  
**Sent:** Fri 3/21/2014 5:12:49 PM  
**Subject:** RE: Off-Cycle Credits

[Ex. 7] Sorry I was out sick a couple days. I scheduled a room for 1:00 on Monday. Can you arrange a conference call #?

Jim

**From:** [Ex. 7]@vw.com]  
**Sent:** Thursday, March 20, 2014 1:48 PM  
**To:** Snyder, Jim  
**Subject:** RE: Off-Cycle Credits  
**Importance:** High

Hello Jim:

Have you had any success setting up this meeting? Once again, tomorrow afternoon would work for us. Preferably early afternoon. It should take less than one hour. Monday after 11:00 a.m. would be our next chance.

Best regards,

[Ex. 7]

---

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone: [Ex. 7]

Cell: [Ex. 7]

E-Mail: [Ex. 7]

**From:** [Ex. 7]

**Sent:** Wednesday, March 19, 2014 8:49 AM

**To:** 'Snyder, Jim'

**Subject:** RE: Off-Cycle Credits

**Importance:** High

Hello Jim:

Our Friday morning is booked, but anytime Friday after 12:30 p.m. would work.

Regards,

[Ex. 7]

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]

**Sent:** Tuesday, March 18, 2014 5:45 PM

**To:** [Ex. 7]

**Subject:** RE: Off-Cycle Credits

[Ex. 7] Linc won't be in this Thursday. We could do something Friday , Monday or Next Thursday afternoon. The rest of next week is actually pretty crowded.

Jim

**From:** [Ex. 7]@vw.com]  
**Sent:** Monday, March 17, 2014 11:11 AM  
**To:** Snyder, Jim  
**Cc:** [Ex. 7]  
**Subject:** RE: Off-Cycle Credits  
**Importance:** High

Hello Jim:

I would like to try again to schedule a VW/EPA conference call to have a preliminary discussion regarding off-cycle GHG credits. If possible, we would like to do this within the next few days. I have meetings tomorrow and Wednesday mornings at 0900-1030. Do you have an opening in your schedule that would work?

Best regards,

[Ex. 7]

---

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone: [Ex. 7]

Cell: [Ex. 7]

E-Mail: [Ex. 7]



---

**From:** [Ex. 7]  
**Sent:** Monday, March 10, 2014 3:00 PM  
**To:** 'Snyder, Jim'  
**Cc:** [Ex. 7]@vw.com)  
**Subject:** RE: Off-Cycle Credits

Hello Jim:

Thanks for the response. Unfortunately, Thursday morning (03/13/14) doesn't work for us. Since this call does not involve our German colleagues, afternoons are okay. Would a call on Wednesday (03/12/14) after 3:00 p.m. or Thursday (03/13/14) after 2:00 p.m. work?

Best regards,

**Ex. 7**

---

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Pho  
Cell  
E-M

**Ex. 7**

-----Original Appointment-----

**From:** Snyder, Jim [<mailto:Snyder.Jim@epa.gov>]

**Sent:** Friday, March 07, 2014 4:01 PM

**To:** **Ex. 7**

**Subject:** New Time Proposed: Off-Cycle Credits

**When:** Tuesday, March 11, 2014 10:00 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).

**Where:** Online Meeting

**Ex. 7** We already have mtgs from 10 to 12 on Tuesday. Wed morning too but Thursday morning is open. Afternoons are available too if its just us but I assume there may be German call-ins?

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

-----

New Meeting Time Proposed:

Thursday, March 13, 2014 10:00 AM-11:00 AM (GMT-05:00) Eastern Time (US & Canada).

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Ex. 7  
**Sent:** Fri 3/21/2014 5:17:14 PM  
**Subject:** RE: Off-Cycle Credits

Hi Jim:

Thanks for setting this up. Two or three of us from VW will call in so I will arrange the call-in number. Hope that you're feeling better.

Regards,

Ex. 7

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]  
**Sent:** Friday, March 21, 2014 1:13 PM  
**To:** Ex. 7  
**Subject:** RE: Off-Cycle Credits

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**From:** Ex. 7 @vw.com]  
**Sent:** Thursday, March 20, 2014 1:48 PM  
**To:** Snyder, Jim  
**Subject:** RE: Off-Cycle Credits  
**Importance:** High

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Best regards,

Ex. 7

---

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone: Ex. 7

Cell: Ex. 7

E-Mail: Ex. 7

**From:** Kata, Leonard (EEO)  
**Sent:** Wednesday, March 19, 2014 8:49 AM  
**To:** 'Snyder, Jim'  
**Subject:** RE: Off-Cycle Credits  
**Importance:** High

Hello Jim:

Our Friday morning is booked, but anytime Friday after 12:30 p.m. would work.

Regards,

Ex. 7

**From:** Snyder, Jim [mailto:Snyder.Jim@epa.gov]  
**Sent:** Tuesday, March 18, 2014 5:45 PM  
**To:** Ex. 7  
**Subject:** RE: Off-Cycle Credits

Ex. 7 Linc won't be in this Thursday. We could do something Friday, Monday or Next Thursday afternoon. The rest of next week is actually pretty crowded.

Jim

**From:** Ex. 7 [mailto:Ex. 7@vw.com]  
**Sent:** Monday, March 17, 2014 11:11 AM  
**To:** Snyder, Jim  
**Cc:** Ex. 7  
**Subject:** RE: Off-Cycle Credits  
**Importance:** High

Hello Jim:

I would like to try again to schedule a VW/EPA conference call to have a preliminary discussion regarding off-cycle GHG credits. If possible, we would like to do this within the next few days. I have meetings tomorrow and Wednesday mornings at 0900-1030. Do you have an opening in your schedule that would work?

Best regards,

**Ex. 7**

---

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone: **Ex. 7**

Cell: **Ex. 7**

E-Mail: **Ex. 7**

---

**From:** **Ex. 7**  
**Sent:** Monday, March 10, 2014 3:00 PM  
**To:** 'Snyder, Jim'  
**Cc:** **Ex. 7** (@vw.com)  
**Subject:** RE: Off-Cycle Credits

Hello Jim:

Thanks for the response. Unfortunately, Thursday morning (03/13/14) doesn't work for us. Since this call does not involve our German colleagues, afternoons are okay. Would a call on Wednesday (03/12/14) after 3:00 p.m. or Thursday (03/13/14) after 2:00 p.m. work?

Best regards,

Ex. 7

---

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone: Ex. 7

Cell: Ex. 7

E-Mail: Ex. 7

-----Original Appointment-----

**From:** Snyder, Jim [<mailto:Snyder.Jim@epa.gov>]

**Sent:** Friday, March 07, 2014 4:01 PM



To: Ex. 7

**Subject:** New Time Proposed: Off-Cycle Credits

**When:** Tuesday, March 11, 2014 10:00 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).

**Where:** Online Meeting

Ex. 7 We already have mtgs from 10 to 12 on Tuesday. Wed morning too but Thursday morning is open. Afternoons are available too if its just us but I assume there may be German call-ins?

Jim Snyder  
Light-Duty Vehicle Group  
Compliance Division  
United States Environmental Protection Agency  
(734) 214-4946  
[snyder.jim@epa.gov](mailto:snyder.jim@epa.gov)

-----  
New Meeting Time Proposed:

Thursday, March 13, 2014 10:00 AM-11:00 AM (GMT-05:00) Eastern Time (US & Canada).

**From:** Ex. 7  
**Location:** AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE  
**Importance:** Normal  
**Subject:** Accepted: VW phone conference: discuss off-cycle GHG credits  
**Start Date/Time:** Mon 3/31/2014 5:00:00 PM  
**End Date/Time:** Mon 3/31/2014 6:00:00 PM

;

**To:** Wehrly, Linc[wehrly.linc@epa.gov]; Snyder, Jim[Snyder.Jim@epa.gov]; French, Roberts[french.roberts@epa.gov]; Wright, DavidA[Wright.DavidA@epa.gov]; Dalton, Joel[Dalton.Joel@epa.gov]  
**From:** Ex. 7  
**Sent:** Fri 3/21/2014 5:56:58 PM  
**Subject:** VW Off-Cycle GHG Credits Conference Call

To all:

I have added some VW participants and included a call-in number for the EPA/VW call on March 31, 2014 at 1:00 p.m. I am not certain if all participants will see these additions or only the organizer (Jim Snyder). Therefore, the call-in information is provided below.

To join by telephone, call:

**Non-Responsive**

Conference ID: Non-Responsive

My apology if this is a duplication.

Best regards,

**Ex. 7**

---

**Ex. 7**

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone:

Cell:

E-Mail:

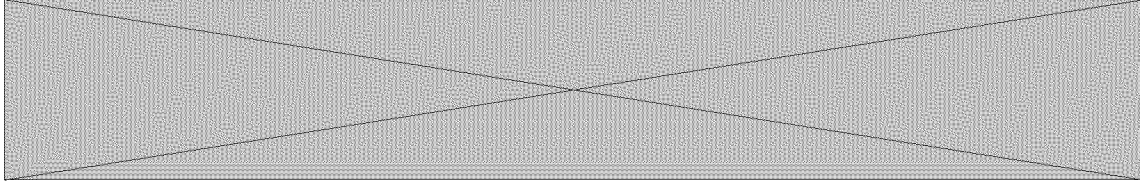
**Ex. 7**

**From:** Schmidt, Oliver (EEO)  
**Location:** AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE  
**Importance:** Normal  
**Subject:** Accepted: FW: VW phone conference: discuss off-cycle GHG credits  
**Start Date/Time:** Mon 3/31/2014 5:00:00 PM  
**End Date/Time:** Mon 3/31/2014 6:00:00 PM

**From:** Tamborra, Nick (EEO)  
**Location:** AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE  
**Importance:** Normal  
**Subject:** Accepted: FW: VW phone conference: discuss off-cycle GHG credits  
**Start Date/Time:** Mon 3/31/2014 5:00:00 PM  
**End Date/Time:** Mon 3/31/2014 6:00:00 PM

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Mon 3/24/2014 4:03:29 PM  
**Subject:** Green Car Report Daily Headlines

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The latest from your friends at GCR:

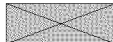
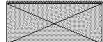
**VW Golf GTE Plug-In Hybrid,**  
**Tesla Pedals And Safety,**  
**Honda Hybrid Rundown:**  
**Today's Car News**

Mar 24, 2014 03:50 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



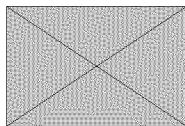
Today on Green CarReports: We drive VW's first plug-in hybrid, ask whether the Tesla Model S has a potentially hazardous safety issue, and offer up a sexy video (if you're into that sort of thing). All this and more on Green Car Reports. Next month, Canada's National Advanced Transportation Center--an electric-car advocacy group--hopes to get 350...

[comments](#) | [read more](#)



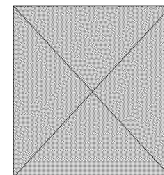
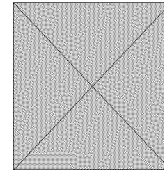
**All-Wheel-Drive Hybrids:**  
**Hybrid SUVs, Crossovers**  
**With AWD Ultimate Guide**

Mar 24, 2014 03:53 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



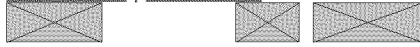
So you want a hybrid car, with its high gas mileage and maybe some all-electric running--but you also need all-wheel drive. What are your options? The question came to mind after testing the 2014 Subaru XV Crosstrek Hybrid, the small Japanese brand's first-ever hybrid, which

More ways to follow us:



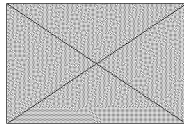
comes standard with all-wheel drive just like every other sedan and...

[comments](#) | [read more](#)



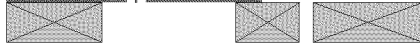
## It's Not Just Cars: Diesel Tractors, Construction Equipment Clean Up Emissions Too

Mar 24, 2014 02:37 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



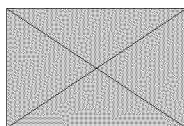
Cars and utility vehicles are getting greener, but they're far from the only vehicles out there. To reduce the environmental impact of internal-combustion engines in a meaningful way, the emissions of commercial vehicles have to be curtailed as well. Heavy-duty trucks are already getting cleaned up, and now diesel tractors and construction...

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## Life With Tesla Model S: Is Pedal Placement A Safety Hazard?

Mar 24, 2014 12:42 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(David Noland)



Like most accidents, it happened fast, with no warning. I'd just bought a gallon jug of cider at a local apple farm, and was driving my Tesla Model S down the farm's exit driveway, which exits into a 40-mph two-lane suburban road. The narrow driveway, surrounded by woods, is steeply downhill, and I had to stop at the bottom where it met the road...

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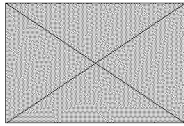


## Volkswagen Golf GTE Plug-In Hybrid: First Drive Of Prototype

Mar 24, 2014 11:33 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)



(Antony Ingram)



Volkswagen is on an electric-vehicle model offensive right now. Not only is the e-Up electric minicar on sale in Europe, dominating Germany's electric sales charts, but the automaker has now launched the e-Golf, an electric version of its popular compact—a car that will make its way to U.S. shores. There's a third player in its strategy, too—the...

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**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Tue 3/25/2014 10:24:42 AM  
**Subject:** 2015 Volkswagen Group Fuel Economy Labels

Hi Dave;

I just wanted to let you know that since we spoke last time, I have added three new 2015 Bentley fuel economy labels and seven new 2015 Audi labels.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Klepp, Robert[Klepp.Robert@epa.gov]; Choi, Jake[Choi.Jake@epa.gov]; Ruske, Ross[Ruske.Ross@epa.gov]; Jorquera, Mario[Jorquera.Mario@epa.gov]; Miller, Anthony[Miller.Anthony@epa.gov]; Adair, Jocelyn[Adair.Jocelyn@epa.gov]; Isin, Amelie[Isin.Amelie@epa.gov]; Wick, Anne[Wick.Anne@epa.gov]; Alexander, David[Alexander.David@epa.gov]; Kaul, Meetu[Kaul.Meetu@epa.gov]  
**From:** Belser, Evan  
**Sent:** Tue 3/25/2014 5:04:50 PM  
**Subject:** RE: MSEB Branch Meeting

Below is the agenda from today's branch meeting.

Thanks,  
Evan

**MSEB Branch Meeting**  
**March 25, 2014**  
**Run by Evan in Bob's Absence**

1. Case Conclusions: Criteria

**Ex. 7**

2. CBP's Import Safety Committee - Mario

3. April 10, 8:30 - 10:00am, come see Michael Greenstone of MIT speak about third-party auditing programs (see his OpEd on reverse)

4. Call for Counseling:

**Ex. 7**

5. Training: budgeting decisions underway; provide Bob a list of your mandatory and requested training by the next Branch Meeting, April 1.

6. AED General

**Ex. 7**

- **Ex. 7** #s

## 7. MSEB General

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**Ex. 7**

Red Flags, Hear Red Flags  
By MICHAEL GREENSTONE  
NY Times, Published: December 6, 2013

WHAT do Enron and the corporate-accounting scandals of the early 2000s have in common with the subprime-mortgage crisis and the Great Recession? In both cases, the delivery of accurate information to the broader economy was compromised because auditors were hired and paid by the firms they audited.

Auditors face a conflict of interest between reporting the truth and running their businesses successfully. Our economy and many markets throughout the world remain vulnerable to this conflict. But it does not have to be this way.

There have been efforts to strengthen auditing regulations. In the early 2000s, Congress created a watchdog organization, the Public Company Accounting Oversight Board, to reduce the chances of accounting scandals. But the board's work to implement even modest reforms has faced strenuous opposition from the auditing profession.

Senator Al Franken's amendment to the Dodd-Frank financial-reform law of 2010 targeted an obvious conflict of interest -- security issuers shopped for their own ratings, which contributed to credit rating agencies' generous grading of many financial products before the Great Recession. Despite bipartisan support for the amendment, lawmakers instead asked the Securities and Exchange Commission to study the issue. Three years later, they're still studying.

What would happen if auditors were given better incentives to tell the truth?

In a recent study published in The Quarterly Journal of Economics, my co-authors -- Esther Duflo, of M.I.T., and Rohini Pande and Nicholas Ryan, both of Harvard -- and I reported on an experiment we conducted in the state of Gujarat, India. We found that altering auditors' incentives to mitigate the conflict of interest leads auditors to report more truthfully. More important, this means regulations work better and keep people safer.

We focused on the regulation of air and water

pollution from industrial plants in Gujarat. The Gujarat Pollution Control Board (G.P.C.B.) requires plants with high pollution potential to hire and pay auditors to check air and water pollution levels three times annually and then submit a yearly report to the G.P.C.B.

With the G.P.C.B., we changed the auditing rules for a randomly selected set of firms, but not for a control group. The randomized selection is important because it ensures that the firms required to comply with the new auditing rules are initially no different from the control firms.

In the new system, auditors were paid a fixed fee from a central pool of money, a subset of the audits was chosen to have its findings re-examined, and auditors received payments for accurate reports, judged by comparisons with the re-examinations. The control group continued under the status quo system in which auditors were chosen and paid by the plants they were auditing.

The results are striking. While many of the plants violated the pollution standards, few of the auditors in the control group reported these violations. In the case of particulate matter, an especially harmful air pollutant, auditors reported that only 7 percent of industrial plants violated the pollution standard. In reality, 59 percent of plants exceeded it.

The rules changes caused the auditors to report more truthfully. In the restructured market, auditors were 80 percent less likely to falsely report a pollution reading as in compliance, and their reported pollution readings were 50 to 70 percent higher than when they were working in the status quo system. This difference was as large even when comparing reports of auditors working simultaneously under the two systems.

Finally, and most important, the plants that were required to use the new auditing system significantly reduced their emissions of air and water pollution, relative to the plants operating in the status quo system. Presumably, this was because the plants' operators understood that the regulators were

receiving more accurate information and would follow up on it.

The regulation of pollution in Gujarat differs from requirements for quarterly financial reports and the rating of bonds in several respects. However, like all third-party audit markets, they share a common conflict of interest: The auditors are hired and paid by the firms who have a stake in the outcome of the audit.

This example shows that common-sense changes in incentives allow auditors to report more accurately and regulations to work. But reforms that fail to target the fundamental conflict of interest are unlikely to succeed.

A criticism of such reforms is that they would be too costly. But the opposite is more likely. That's because when people own stocks or buy bonds, they're taking a risk because they don't know everything about the company or bond they're investing in, and prices reflect that risk. The more they know, the lower the risk, and the higher the stock and bond prices, ultimately producing a more efficient and fairer financial system.

Altering the third-party auditing system isn't the solution to all our economic problems. But removing the fundamental conflict of interest behind the auditing of public firms and the rating of financial products is likely to help prevent some future ones.

*Michael Greenstone is a professor of economics at M.I.T*

-----Original Appointment-----

**From:** Klepp, Robert

**Sent:** Sunday, September 15, 2013 10:14 PM

**To:** Klepp, Robert; Choi, Jake; Ruske, Ross; Jorquera, Mario; Miller, Anthony; Adair, Jocelyn; Isin, Amelie; Wick, Anne; Alexander, David; Belser, Evan; Kaul, Meetu

**Cc:** Snider, Patricia S.

**Subject:** MSEB Branch Meeting

**When:** Tuesday, March 25, 2014 10:00 AM-11:00 AM (UTC-05:00) Eastern Time (US & Canada).

**Where:** DCRoomARS1142/DC-ARIEL-RIOS-OECA-OCE

**To:** Miller, Anthony[Miller.Anthony@epa.gov]; Jorquera, Mario[Jorquera.Mario@epa.gov]; Isin, Amelie[Isin.Amelie@epa.gov]; Kaul, Meetu[Kaul.Meetu@epa.gov]; Wick, Anne[Wick.Anne@epa.gov]; Choi, Jake[Choi.Jake@epa.gov]; Adair, Jocelyn[Adair.Jocelyn@epa.gov]; Alexander, David[Alexander.David@epa.gov]; Ruske, Ross[Ruske.Ross@epa.gov]  
**Cc:** Klepp, Robert[Klepp.Robert@epa.gov]  
**From:** Belser, Evan  
**Sent:** Tue 3/25/2014 9:09:11 PM  
**Subject:** MSEB General: Thursday 11am

Hey everyone,

The MSEB General this week will be Thursday at 11am (not tomorrow) . The draft agenda is below (order will change). Please provide any additional agenda items asap. Tomorrow by noon I will send the final agenda to Phill and Jacqueline, along with any paper you'd like them to have in advance. I already have something for items #1 and #5. Please provide me with any paper before 11am tomorrow.

Thanks,  
Evan

1. Defeat Device Penalty Policy Follow-Up
2. Mario Report on Long Beach Inspections and Trainings

**Ex. 7**

Evan M. Belser

US EPA, Air Enforcement Division

202-564-6850



*Do not release this email. This is confidential attorney-client communication and privileged attorney work product created for law enforcement purposes.*

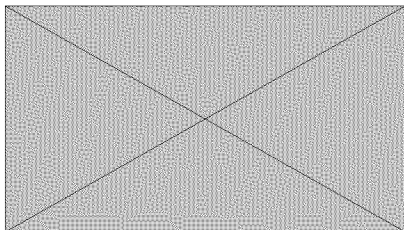
**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** WardsAuto OEM Edition  
**Sent:** Wed 3/26/2014 8:00:28 AM  
**Subject:** New Chrysler 200 Ready to Take on Top Competitors

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## WardsAuto OEM Edition

March 26, 2014

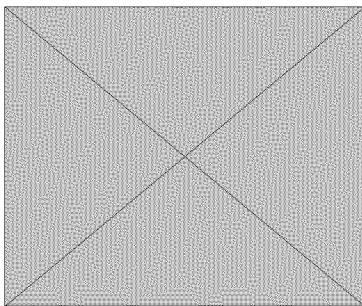
### New A3 Sedan Anchors Audi's U.S. Volume Play



The 4-door model is the first in a string of seven A3 variants to come that will include a drop-top cabriolet, Sportback model and a performance S version, plus the long-awaited Q3 CUV.

[FULL ARTICLE](#)

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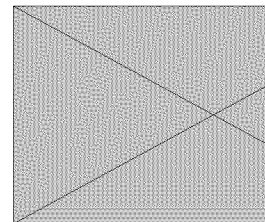


#### **Design Tip Subscription**

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### Video: Audi A3 Ad, Dues



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This white paper details how to anticipate and mitigate the risks of potential supply chain disruptions. Using five out-of-the-ordinary scenarios, it describes what can be done to prepare for disruptions and how to mitigate their effects after the event.

[Download "Supply Chain Management: What You Don't See Can Hurt You" Whitepaper Now!](#)

Bringing new vehicles to market has never been more challenging. Not only are new vehicles more complex than ever before, but supply chains are stretched, consumers are more demanding and even small delays can cost

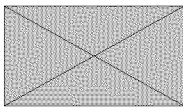
Audi's 60-second A3 spot features comedian Ricky Gervais and other notable celebrities touting the new sedan's uncompromising design.

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## Autoline Daily



Renault Drops Caterham; Toyota Gets Gas Going Green;  
How GM Tested New Engine

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**The race to 54.5 mpg by 2025 is on.**

[ArcelorMittal's](#) commercially available advanced steel grades, coupled with emerging and longer-term breakthrough steels, provide Body-in-White weight reduction solutions that will help automakers achieve 54.5 mpg by 2025, at a lower cost – and with lower total life cycle CO2 emissions – than competing materials. [Click Here](#)

## Argentina's New Vehicle Tax Crippling Luxury Imports

The head of an industry trade group says not a single BMW, Mercedes, Porsche or Mitsubishi has been sold in Argentina since the tax hike took effect Jan. 1.

[FULL ARTICLE](#)

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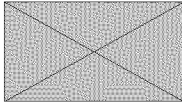
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## **VideoWire**



Alabama Family Sues GM Over Switch; NY Cracks Down on Deceptive Car Ads

## **Automakers Wary of Russia Crisis, But Long-Term Damage Unlikely**

Foreign-owned automotive operations in Russia are a significant driver of the economy, making it unlikely President Vladimir Putin would allow production to be disrupted.

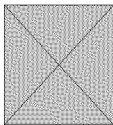
[FULL ARTICLE](#)

## **SAE Sticks With 'Back to Basics' Congress**

SAE International expects 1,500 technical papers to be presented at the World Congress April 8-10 and 170 companies to exhibit. Attendance once again should be about 10,000.

[FULL ARTICLE](#)

## **GM Puts All Its Chips on Newly Minted CEO**



### **FINAL INSPECTION BLOG**

Barra will need to convince the car-buying public the recall scandal is a relic of the old GM if public confidence is to be restored and market share retained.

[FULL ARTICLE](#)

## **New 200 Better Prepared to Take on Top Competitors, Chrysler Says**

The '15 Chrysler 200 is based on the automaker's CUS-wide platform, which also underpins the Dodge Dart, Jeep Cherokee and Alfa Romeo Giulia.

[FULL ARTICLE](#)

## **Gallery: 2014 Ward's 10 Best Interiors**

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## **Nominee, Toyota Tundra 1794 CrewMax**

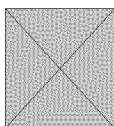
This top-level Toyota Tundra 1794 CrewMax, which stickers at \$49,715, is well equipped with perforated leather seats, front-row knee airbags, Entune premium JBL audio and a 7-in. high-resolution touch screen.

## **Dealers Say GM Making Right Moves in Recall**

Retailers doing fixes on recalled vehicles say customers don't appear upset.

[FULL ARTICLE](#)

## **Packard Plant: From Abandoned to Embraced**



### **FINAL INSPECTION BLOG**

Detroit Free Press photographer Brian Kaufman captures the tragic decline of a historic vehicle assembly plant on the city's east side in a riveting new documentary, "Packard: The Last Shift."

[FULL ARTICLE](#)

## **Gallery: Packard, The Last Shift**

A new documentary, "Packard: The Last Shift," aired at a Detroit film festival last week, capturing the glory days and bleak present-day condition of one of Detroit's most historically significant industrial relics.

## **Chrysler Sterling Heights Paint Shop Among Most Advanced**

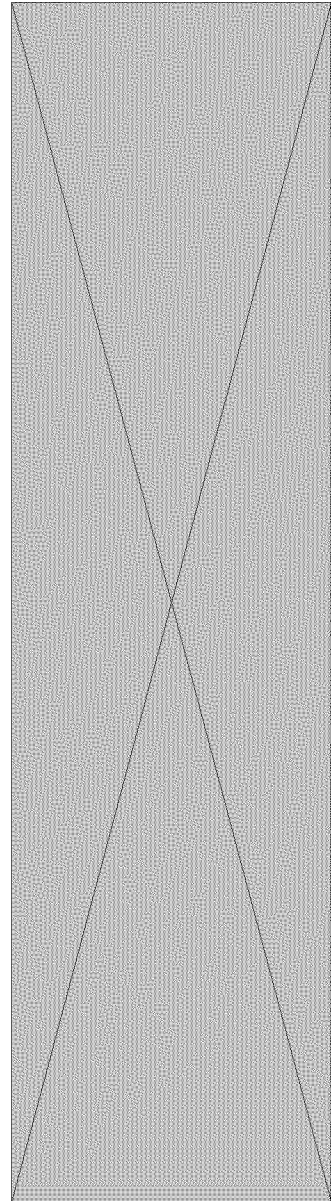
Auto-adjusting inspection lighting, a new type of conveyer system and recaptured air for spray booths are some of the innovations at the automaker's remade Detroit-area assembly plant.

[FULL ARTICLE](#)

## **Hyundai Reveals Next-Gen Sonata in Korea**

Softened sheet metal, a more angular interior look and refined ride and handling are key characteristics of the new midsize sedan, Hyundai says.

[FULL ARTICLE](#)



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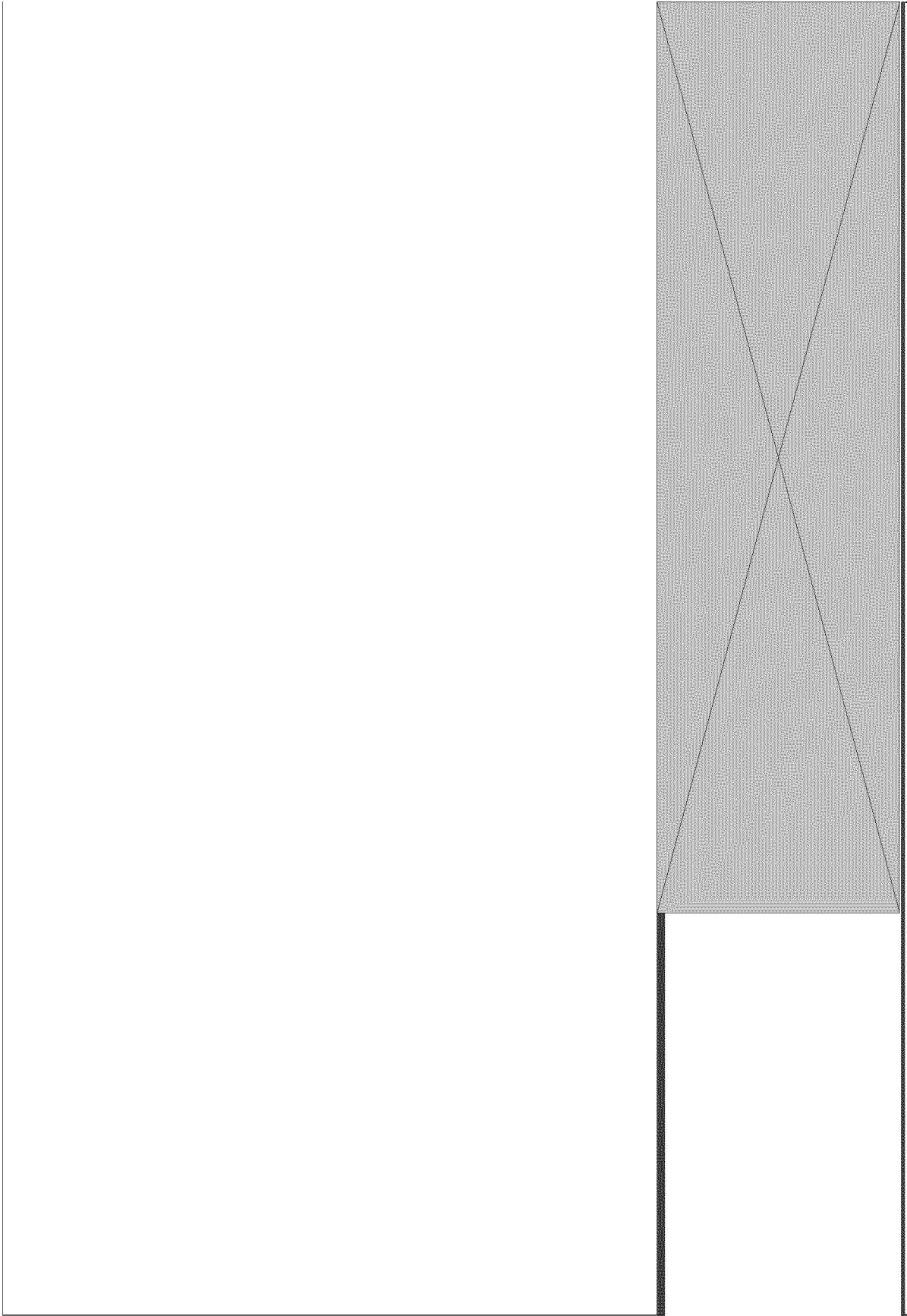
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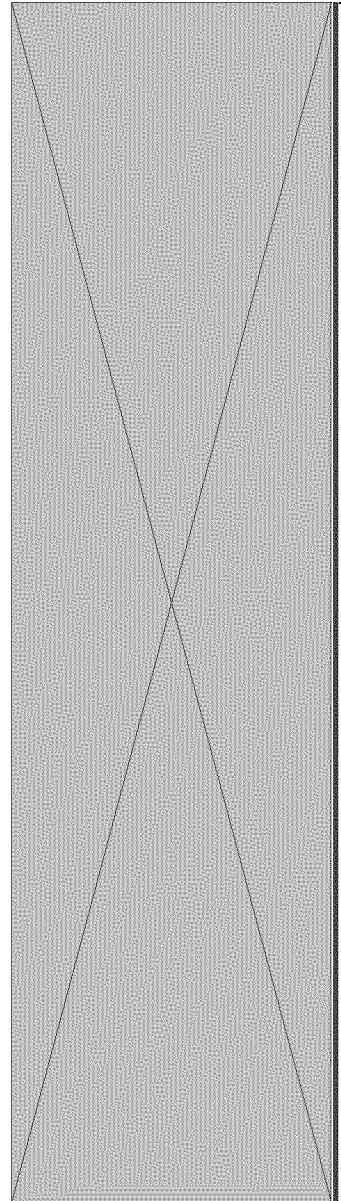
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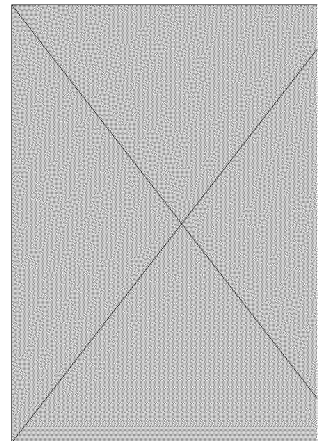
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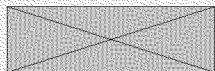


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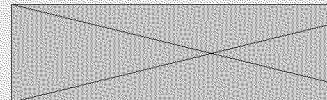
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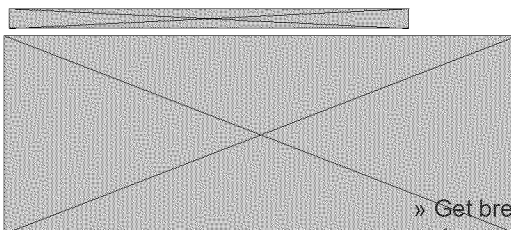
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Today's most read story

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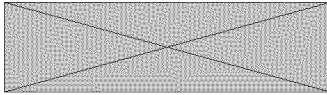
General Motors CEO Mary Barra vowed in videos posted on YouTube today to implement "a world class process" for vehicle safety -- her first direct message to consumers affected by GM's recall of 1.6 million cars for a defective ignition switch. ... » [READ](#)

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Nissan said it will recall 989,701 vehicles including its latest Altima sedans in North America to fix a software problem that could deactivate the airbags. ... » [READ](#)

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## **Ohio Senate panel approves bill allowing Tesla retail stores**

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An Ohio Senate committee approved a bill barring automakers from selling directly to consumers except for three stores operated by Tesla Motors. ... » [READ](#)

## **Toyota buying back stock for first time since 2009 as cash grows**

12:51 pm U.S. ET | Mar 26

Toyota said it will buy back stock for the first time in five years as its cash pile swells and profit climbs. Toyota will repurchase as many as 60 million shares, equivalent to a 1.9 percent stake, for 360 billion yen (\$3.5 billion), according to a statement Tuesday. ...

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Less than three months into her tenure as GM CEO, Mary Barra has more than recalls to worry about. ...

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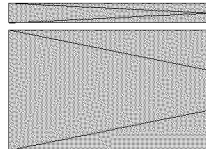
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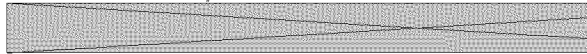
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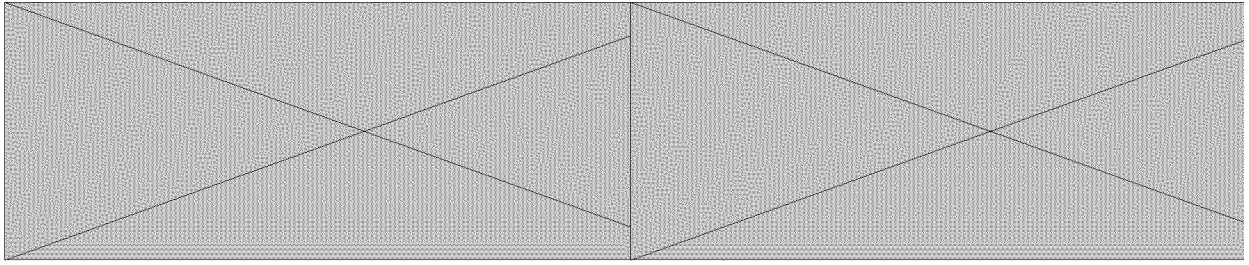
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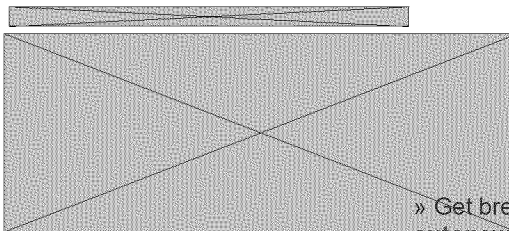


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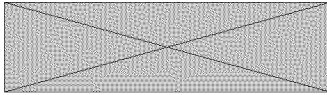
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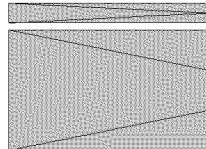
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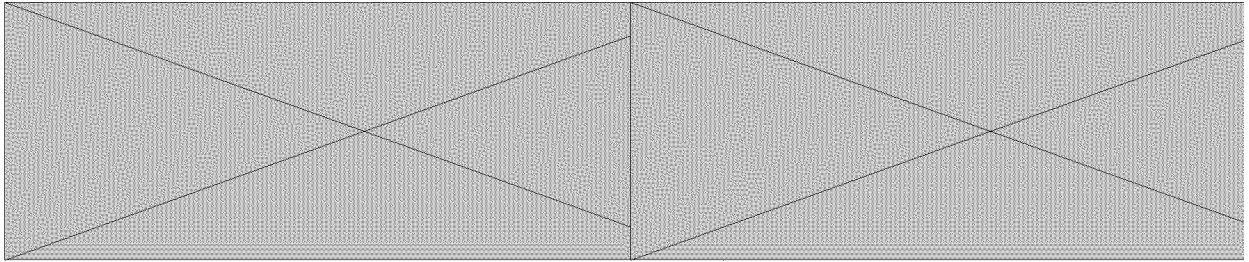


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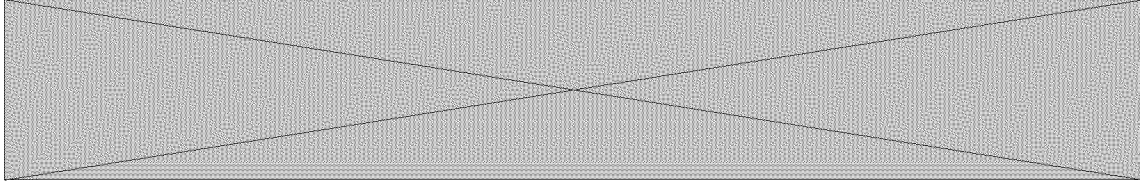
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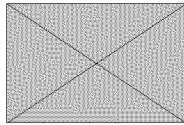
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Mar 27, 2014 03:47 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



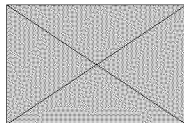
Today on Green CarReports: Tesla's doing well on reservations for its next model, Audi offers renewable energy to recharge its first plug-in hybrid (in Germany, anyway), and hydrogen fuel-cell vehicles are (still) coming soon. All this and more on Green Car Reports. There may be as many as 13,000 reservations for the Tesla Model X electric...

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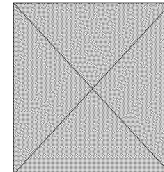
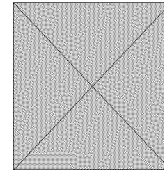
## **2014 BMW 535d xDrive Diesel Sedan: Fuel-Economy Drive Review**

Mar 27, 2014 03:46 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



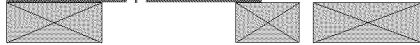
For 2014, BMW offers diesel engines in its three sedan lines, and now we've spent a long weekend with the mid-size 5-Series sedan fitted with the fuel-efficient engine. Given the depth-of-winter test schedule, its xDrive all-wheel-drive system was very welcome--and almost a necessity for our unpaved mountain driveway. The 25-

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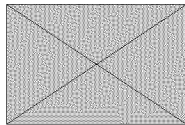
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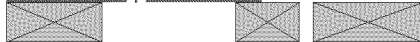
## Audi A3 e-tron Option: Carbon-Free Recharging (In Germany)

Mar 27, 2014 01:55 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



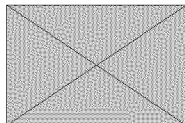
One advantage to plug-in electric cars is that they can operate with no carbon footprint if the electricity used to recharge them is generated from renewable sources. Burning liquid fuels, on the other hand, will always generate carbon emissions. Now Audi is offering a way for German buyers of its new 2015 Audi A3 e-tron plug-in hybrid model to...

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## Even In China, Coal Consumption May Be Peaking

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(John Voelcker)



While use of coal for generating electricity has started to decline in the U.S., China continues to build coal power plants. With public anger at filthy air bubbling below the surface, and the costs of associated health effects more apparent, the country's government is well aware of the long-term costs. And that's even before factoring in climate...

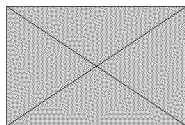
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## Toyota i-Road Trials Start In Tokyo: Another Electric Not- Quite-Car

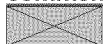
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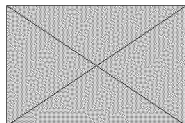
Toyota is to start real-world consumer trials of its unique i-Road urban electric vehicle in its native Japan. Like its European equivalent, Renault's Twizy, the i-Road aims to combine the comfort and safety of a car with the ease-of-use and convenience of a scooter or motorcycle. While the Twizy uses a (relatively) traditional four-wheel layout...

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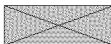
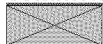
## 2015 Tesla Model X Crossover Reservations: 13,000, Maybe

Mar 27, 2014 11:00 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



For an electric sedan priced above the reach of many people, sales of the Tesla Model S have been rather impressive so far. That relative popularity should also carry over to the firm's upcoming crossover, the 2015 Tesla Model X. The Tesla Motors Club is tracking Model X reservations, and so far that number has crept over 13,000 units worldwide...

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**From:** Linda Carrizosa  
**Sent:** Thur 3/27/2014 7:12:34 PM  
**Subject:** Meeting materials now availalbe for CaFCP April 2, 2014 Steering Team Meeting Conference  
 Call

Good Morning ST Members:

The agenda and meeting materials are now available for the April 2, 2014 ST Conference Call and are located here: <http://cafcpmembers.org/membersonly/node/3778>. The project status report for March will be posted as soon as it is available in advance of the meeting.

The draft CaFCP Roadmap Progress Report is also available for your review at the above link.  
**In advance of the April 2 Steering Team Phone call, please take the time and read this**

**report** so the group can have a productive discussion during the meeting. Thank you.

Here is the April 2nd Steering Team conference call agenda:

1. CaFCP Roadmap Progress Report – Alex (60 min) – *review draft report and get feedback and guidance from ST*
2. 2014 Vice Chair/2015 Chair – Robert (10 min) – *we need a proposal to consider at Exec Board meeting*
3. Project status reports – Catherine, Nico, Chris (10 min) – *review and discussion as needed*
4. April 16 ST agenda review – Catherine (5 min)
5. Wrap up – Robert (5 min)

Also, here is a reminder for the call information:

Date: **April 2, 2014**

Time: **10:30am – 12:00pm**, Pacific Time

Dial-in: **(916) 376-8968**

Gotomeeting: <https://global.gotomeeting.com/join/927637653>, Meeting ID: **Non-Responsive**

The meeting outlook invite will also be updated and sent momentarily.

**Linda Carrizosa** | Administrative Assistant | CaFCP

D 916 371 2870 | F 916 375 8005 | [lcarrizosa@cafc.org](mailto:lcarrizosa@cafc.org)

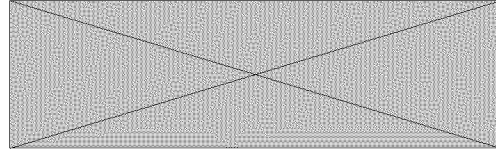
3300 Industrial Blvd., Ste. 1000, West Sacramento, CA 95691 | [www.cafcp.com](http://www.cafcp.com)

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Thur 3/27/2014 8:08:40 PM  
**Subject:** P.M. NEWSCAST: Using Ferrari to jump-start Alfa Romeo | U.S. shedding Ally shares through IPO | VW reassigns TN boss | Renault-Nissan turns 15

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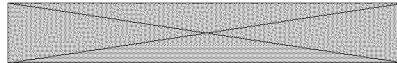
**March 27, 2014**



**Ferrari oomph for Alfa »**

**IPO of Ally shares »**

**VW reassigns TN boss »**



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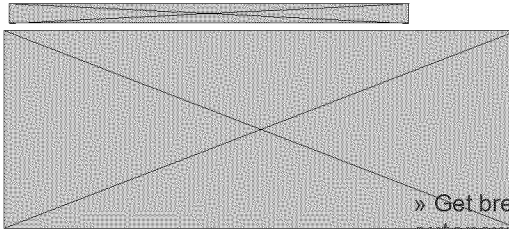
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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Thur 3/27/2014 8:54:03 PM  
**Subject:** DAILY: GM urged to warn owners not to drive recalled models | Infiniti's new product strategy chief | Toyota to buck convention with '15 Camry refresh | BMW's S.C. factory powerhouse

Today's most read story

**GM's new recall risk: replacement ignitions**

March 27, 2014



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## TOP NEWS

### **GM urged to warn owners not to drive recalled models**

3:27 pm U.S. ET | Mar 27

GM should promptly warn consumers not to drive GM cars recalled because of faulty ignition switches that can unexpectedly turn off engines and airbags as the vehicles are running, Senator Richard Blumenthal of Connecticut said. ... » [READ](#)

### **GM's new recall risk: replacement ignitions**

4:30 pm U.S. ET | Mar 26

As General Motors recalls 1.6 million vehicles that have defective ignition switches linked to at least 12 deaths, it faces another potential risk -- this time in the spare parts market. ... » [READ](#)

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## **Infiniti names new product strategy head**

5:32 am U.S. ET | Mar 27

Infiniti named industry veteran Francois Bancon as its product strategy head. Bancon now leads advanced product planning at parent Nissan Motor Corp. ...

[» READ](#)

## **VW reassigns Chattanooga plant chief Fischer amid management shuffle**

11:20 am U.S. ET | Mar 27

Frank Fischer, who has led Volkswagen AG's operations in Chattanooga since the automaker announced its return to manufacturing in the United States in 2008, has been reassigned to lead an assembly plant in Germany, the company announced today. ... [» READ](#)

## **BMW X7 poised to make S.C. plant an even bigger manufacturing powerhouse**

2:30 pm U.S. ET | Mar 27

BMW's next expansion at its Spartanburg, S.C., plant and the addition of the X7 crossover will mark another milestone for a factory that's become a centerpiece of BMW's global manufacturing strategy. ... [» READ](#)

### **ON THE BLOGS**

**DAVID PHILLIPS**

**Why Toyota will buck convention with '15 Camry update at N.Y. show**

[» READ](#)

**JIM HENRY**

**Ally takes step toward 'free at last' with IPO**

[» READ](#)

### **MOST READ (Last 7 days)**

**'Cardinal sin': Former GM engineers say quiet '06 redesign of faulty ignition switch was a major violation**

of protocol

Chrysler's Ram gains ground on Silverado

BMW plans 7-seat crossover for Spartanburg

Ignition woes go beyond GM -- and keys

4-cylinder for Porsche Cayman, Boxster will improve mpg, handling

Bill Ford says UAW's Gettelfinger deserves more credit 'for helping save Ford'

11:40 am U.S. ET | Mar 27

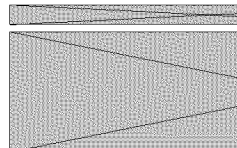
GM: Calls to customer service have doubled since recall

10:49 am U.S. ET | Mar 27

BlackBerry determined to maintain lead in connected-car technology

7:48 am U.S. ET | Mar 27

Alfa Romeo leans on Ferrari for horsepower in brand's



» 4/1 -- Linking Goals to Execution

by Microsoft

» 4/8 -- Social Media & Reputation Tips by Digital Air

Strike

» 4/22 -- Consumer Lifecycle

Management by HP

» April 7, 2014 - PACE Awards

» May 13, 2014 - Marketing Seminar - Los Angeles

» June 3, 2014 - Rising Stars

» June 4, 2014 - ANE Congress

## overhaul

6:08 am U.S. ET | Mar 27

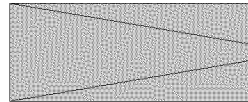
## Ally Financial IPO could generate \$2.7 billion for U.S. Treasury

UPDATED: 3/27/14 11:53 am ET - adds  
background

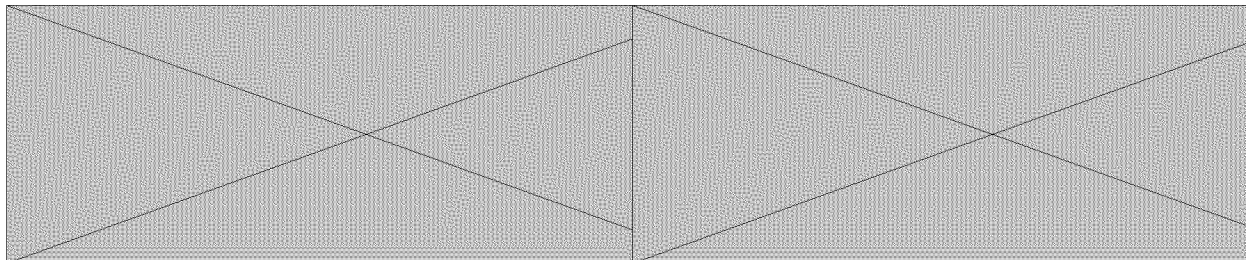
9:00 am U.S. ET | Mar 27

## Superior Industries names chair, 2 interim co-CEOs

3:19 pm U.S. ET | Mar 27



» Sept. 23, 2014 -  
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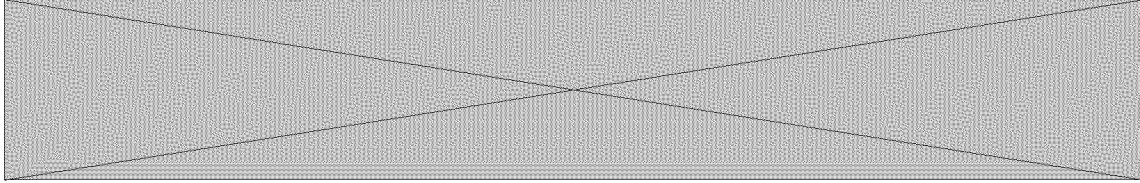
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**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Fri 3/28/2014 4:03:56 PM  
**Subject:** Green Car Report Daily Headlines

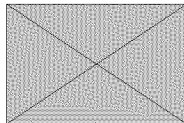
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The latest from your friends at GCR:

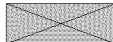
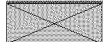
## Tesla Battery Shield, 36-MPG Chrysler, VW e-Up, Ford Slaps Cadillac In Video Ad: Today's Car News

Mar 28, 2014 03:50 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)

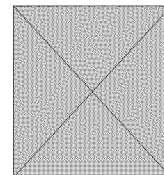
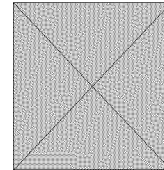


Today on Green Car Reports: Tesla Motors announces a new three-part battery shield system for its Model S electric car, Ford quietly issues a video response to the polarizing 'Poolside' ad that neatly one-ups Cadillac, and we drive the smallest--and most fun--electric Volkswagen. All this and more on Green Car Reports. When Tesla Motors goes all...

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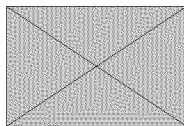


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## Volkswagen e-Up: Driving VW's Smallest Electric Car (Forbidden Fruit)

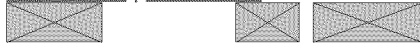
Mar 28, 2014 03:46 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



Of the three plug-in VW cars we drove in Berlin this month, the one we liked best is the one we won't get in North America. The Volkswagen e-Up battery-electric minicar is a blast. It's small, rollerskate-agile, and performs well enough that it would be our preferred vehicle in any

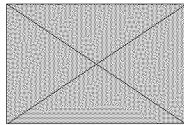
crowded city. And it's a huge upgrade on the gasoline version...

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## Ford Parodies Divisive Cadillac ELR Ad With 'Upside' C-Max Video

Mar 28, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



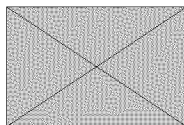
Why do we work so hard? Because hard work means "anything is possible"—and maybe you'll get a nice pool and a fancy car out of it. At least, that's the answer if Cadillac's "Poolside" ad for its ELR range-extended electric luxury coupe was to be believed. But Ford has different ideas. In an excellent parody of that very polarizing Cadillac...

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## Tesla Model S To Get Titanium Battery Shield, Plus Deflectors: BREAKING

Mar 28, 2014 12:16 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



Tesla Motors announced this morning that it will fit three new underbody components to all Model S electric cars to add further protection against impacts from road debris, which caused a pair of fires in its cars last fall. Those two Model S cars were severely damaged when their battery packs, mounted under the floor, were pierced by road debris...

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## 2015 Chrysler 200: 36 MPG Highway Tops Fusion, Camry

Mar 28, 2014 11:30 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



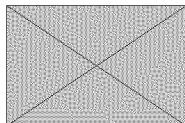
With highway economy of 36 mpg, the 2015 Chrysler 200 isn't the most fuel-efficient vehicle we've written about recently, but it has an important job to do. The old model, despite being widely loathed by anyone forced to rent one at airport desks around the country, sold in large numbers in the U.S. In 2013, it topped 122,000 units and in 2012...

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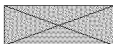
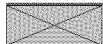
## Tesla Model X Was Tougher To Design Than Model S, Musk Says

Mar 28, 2014 11:00 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



If the Roadster was Tesla's early gigging days and the Model S the debut release from a hot new band, the Model X crossover could be considered Tesla's 'difficult second album'. Elon Musk has even hinted so himself, suggesting the car presents "a harder design problem than the Model S". According to Bloomberg (via Charged EVs), Musk blames himself...

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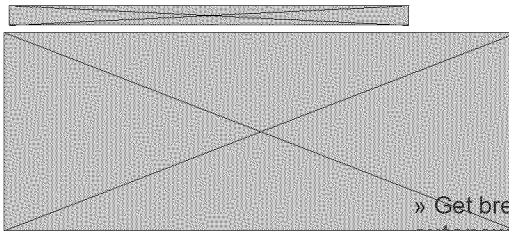
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**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Fri 3/28/2014 8:47:40 PM  
**Subject:** DAILY: Cadillac's Ferguson dispatched to steer GM recall crisis | GM issues stop-delivery order on some Chevy Cruze models | Tesla faces backlash from Texas dealers | Ford spoofs Caddy | VW aids dealers

Today's most read story

**GM issues stop-delivery order on some 2013-14 Chevrolet Cruze compacts**

March 28, 2014



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## TOP NEWS

### **Cadillac's Ferguson sent to D.C. to steer GM recall crisis**

3:27 pm U.S. ET | Mar 28

GM has dispatched Cadillac chief and former head lobbyist Bob Ferguson to Washington, D.C., to help steer the company through the crisis surrounding its handling of the ignition-switch recall. ... » [READ](#)

### **GM issues stop-delivery order on some 2013-14 Chevrolet Cruze compacts**

UPDATED: 3/28/14 1:07 pm ET -- adds details

8:17 am U.S. ET | Mar 28

General Motors is requiring Chevrolet dealers to stop selling some 2013 and 2014 Cruze compact cars for an undisclosed issue, marking another setback as GM grapples with the crisis created by last month's recall of 1.6 million small cars for a faulty ignition switch. ... » [READ](#)

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### **Sabotaging your inventory online?**

What feature do you think car shoppers search for first when browsing your inventory? Hint: it's not price. Hear what real shoppers had to say in the [2014 Inventory Shopper Experience Study](#). It will change the way you merchandise your inventory. Get the full study [here](#).

## **Texas dealers argue against altering franchise laws to lure Tesla plant**

3:39 pm U.S. ET | Mar 28

Texas dealers defended the state's franchise laws today, just days after Gov. Rick Perry suggested that the laws should be reviewed and perhaps changed to let Tesla Motors sell its electric vehicles directly to consumers. ... » [READ](#)

## **Earlier GM recall may have averted most Cobalt deaths**

UPDATED: 3/28/14 10:28 am ET -- adds background

5:15 pm U.S. ET | Mar 27

Of the eight deaths in Chevrolet Cobalts that GM has said may be related to faulty ignition switches, seven occurred after April 2006, when GM says it approved a redesign of the part now being recalled, according to research by Automotive News. ... » [READ](#)

## **VW aids dealers with winter stair-step bonuses**

3:58 pm U.S. ET | Mar 28

Volkswagen Group of America has devised a national bonus program that allows dealerships to recoup stair-step bonuses threatened during this winter's miserable weather. ... » [READ](#)

### **ON THE BLOGS**

[RICHARD TRUETT](#)

**An old Rover plant comes back — and someday, maybe, the brand**

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**Ford vs. Cadillac: C-Max spot spoofs rich-guy ELR spot,**

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common man

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Chrysler's Ram gains ground on  
Silverado

Ignition woes go beyond GM -- and  
keys

Cadillac's European retail strategy  
may be adapted for U.S.

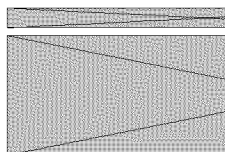
Chrysler decision may shield GM on  
Cobalt liability

BMW's Spartanburg plant will  
be company's biggest

UPDATED: 3/28/14 3:19 pm ET

1:00 pm U.S. ET | Mar 28

Panasonic hesitant to commit to  
Tesla battery factory



» 4/1 -- Linking

Goals to  
Execution by

Microsoft

» 4/8 -- Social  
Media &

11:04 pm U.S. ET | Mar 27

**Ford boosts Mulally's pay 11% to \$23 million on rising profits**

UPDATED: 3/28/14 2:44 pm ET

2:15 pm U.S. ET | Mar 28

**GM safety chief says company must simplify processes in wake of recall**

11:57 am U.S. ET | Mar 28

**NHTSA closes Tesla fire inquiry as Model S gets new battery shield**

UPDATED: 3/28/14 12:10 pm ET -- adds correction

9:17 am U.S. ET | Mar 28

**Ford spending \$500 million to build new V-6 truck engine in Ohio**

12:01 am U.S. ET | Mar 28

**Ram van: A few fridges shy of cargo claim**

12:46 pm U.S. ET | Mar 28

**Toyota recalls 124,050 Avalons to prevent inadvertent airbag deployments**

11:34 am U.S. ET | Mar 28

**Chrysler's Windsor plant 1st in N.A. to earn World Class Manufacturing silver status**

2:46 pm U.S. ET | Mar 28

**Opel will build Buicks in Germany for U.S.**



6:37 am U.S. ET | Mar 28

**GM faces French dealer challenge over Chevy exit from Europe**

1:47 pm U.S. ET | Mar 28

**Obama says U.S.-EU trade talks are moving forward**

3:44 am U.S. ET | Mar 28

**GM pulling Opel out of China after two decades**

1:35 pm U.S. ET | Mar 28

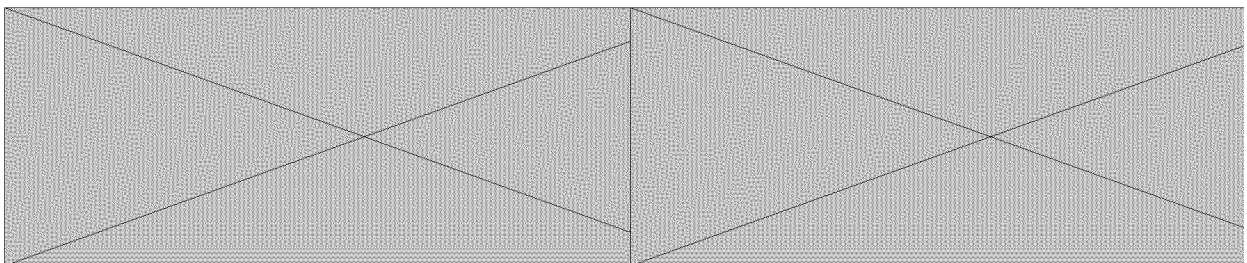
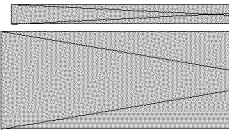
**Enterprise expands car-sharing business into Canada**

6:23 pm U.S. ET | Mar 27

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**Ex. 7** Alex Keros (alexander.keros@gm.com)[alexander.keros@gm.com]; **Ex. 7**

**Ex. 7** Fred Joseck (fred.joseck@ee.doe.gov)[fred.joseck@ee.doe.gov]; Jerome Gregeois (jgregeois@hatci.com)[jgregeois@hatci.com]; MIKULIN, JOHN[MIKULIN.JOHN@EPA.GOV]; Lance Atkins (lance.atkins@nissan-usa.com)[lance.atkins@nissan-usa.com]; mmiyasato@aqmd.gov[mmiyasato@aqmd.gov]; McKinney, Jim@Energy[Jim.McKinney@energy.ca.gov]; Ronald Grasman (ronald.grasman@daimler.com)[ronald.grasman@daimler.com]; **Ex. 7**

**Ex. 7** Olga Gubbins (olga.gubbins@daimler.com)[olga.gubbins@daimler.com]; Pat Kravser[pkrayser@aqmd.gov]; **Ex. 7**

**Ex. 7**

**Ex. 7** Arwed Niestroj (arwed.niestroj@daimler.com)[arwed.niestroj@daimler.com]; Bill Elrick[belrick@CAFCP.org]; Bob Cassidy (robert.cassidy@nissan-usa.com)[robert.cassidy@nissan-usa.com]; Brandi Gonzales[bgonzales@CAFCP.org]; Grundler, Christopher[grundler.christopher@epa.gov]; Chris White[cwhite@CAFCP.org]; Dean Kato (dean@intereco.com)[dean@intereco.com]; Frank Seyfried (frank.seyfried@volkswagen.de)[frank.seyfried@volkswagen.de]; **Ex. 7**

**Ex. 7** Jared Farnsworth (jared.farnsworth@tema.toyota.com)[jared.farnsworth@tema.toyota.com]; Juergen Friedrich (juergen.friedrich@daimler.com)[juergen.friedrich@daimler.com]; Kevin Lee (kslee@hatci.com)[kslee@hatci.com]; Kiho Yoo (k.u@hyundai-motor.com)[k.u@hyundai-motor.com]; Linda Carrizosa[lcarrizosa@cafc.org]; Lisa Mirisola (lirisola@aqmd.gov)[lirisola@aqmd.gov]; Mark S. Torigian Esq (Mtorigian@hatci.com)[Mtorigian@hatci.com]; Matt McClory (matt.mcclory@tema.toyota.com)[matt.mcclory@tema.toyota.com]; Matthew Forrest (matthew.forrest@daimler.com)[matthew.forrest@daimler.com]; Randy Roesser (Randy.Roesser@energy.ca.gov)[Randy.Roesser@energy.ca.gov]; Wysor, Tad[wysor.tad@epa.gov]; Takehito Yokoo (takehito.yokoo@tema.toyota.com)[takehito.yokoo@tema.toyota.com]; Tiger Jeong (tigerjeong@hyundai.com)[tigerjeong@hyundai.com]; Tim Olson (tolson@energy.state.ca.us)[tolson@energy.state.ca.us]; William Craven (william.b.craven@daimler.com)[william.b.craven@daimler.com]

**From:** Linda Carrizosa

**Sent:** Fri 3/28/2014 8:56:21 PM

**Subject:** 4/15 CafCP Executive Board Meeting RSVP reminder and meeting information  
Diamond Bar Hotels.doc

Good Afternoon Executive Board Meeting Members:

Our April 15, 2014 Executive Board Meeting is fast approaching. Here is a recap of general information about the meeting to help in your planning .

Date and Time: 4/15/14-Tuesday: 8:00am - starts with gathering and registration, 8:30am to 5:30pm – Meeting is in session.

-

Location: South Coast AQMD, 21865 East Copley Drive, Diamond Bar, CA 91765, GB conference room. Website: <http://www.aqmd.gov>

Important reminders: Lunch will be on your own in the cafeteria at the Blue Sky Café. Please note that the cafeteria accepts only cash, so make sure you have cash with you.

**RSVP: by Thursday, April 10, 2014, or sooner**

We have started a new RSVP system to help us gather accurate attendance for our CaFCP Meetings. If you are attending this Executive Board Meeting, please register/rsvp on our public website at: [http://cafcg.org/getinvolved/events/cafcg\\_executive\\_board\\_meeting\\_-\\_april\\_15\\_2014](http://cafcg.org/getinvolved/events/cafcg_executive_board_meeting_-_april_15_2014).

If you experience any security restrictions registering from this link, you can also rsvp here: [http://cafcg.org/eb201404\\_signup](http://cafcg.org/eb201404_signup). If you have already registered or rsvp'd using this form.... Thank you!

Please see the attached hotel and airport information.

Meeting materials will be sent out as we get closer to the meetings.

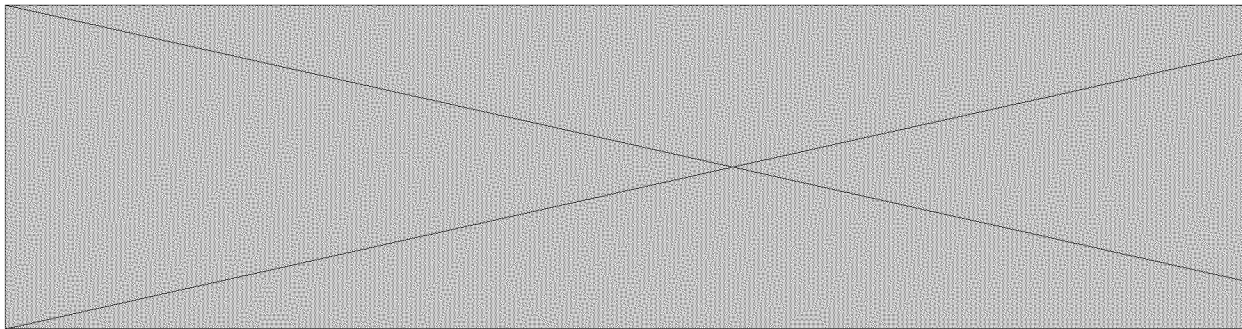
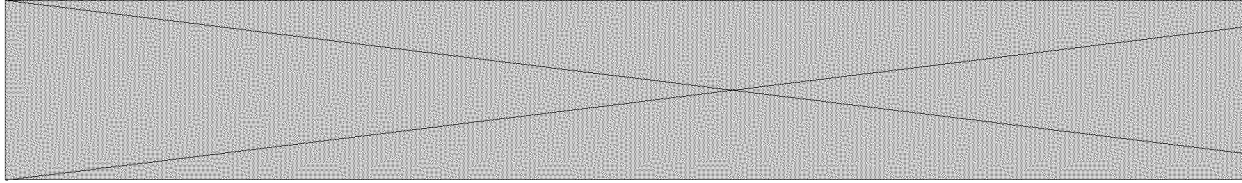
Thank you.

**Linda Carrizosa** | Administrative Assistant | CaFCP

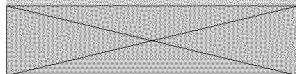
D 916 371 2870 | F 916 375 8005 | [lcarrizosa@cafcf.org](mailto:lcarrizosa@cafcf.org)

3300 Industrial Blvd., Ste. 1000, West Sacramento, CA 95691 | [www.cafcfc.com](http://www.cafcfc.com)

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** The Hill  
**Sent:** Sat 3/29/2014 11:07:17 AM  
**Subject:** The Hill's E-news: March 29, 2014



March 29, 2014



## **The Hill: Palin's bark bigger than her bite?**

By Cameron Joseph

Former Alaska Gov. Sarah Palin made a slew of 2014 endorsements this week, but for her chosen candidates the Mama Grizzly's roar might be bigger than her bite.

## **The Hill: Biden: 'It's time to give America a raise'**

By Amie Parnes

Vice President Joe Biden urged Congress to

raise the federal minimum wage, concluding that it's "good for business" and "helpful to the overall economy."

### **The Hill: GOP on VA backlog: 'Bureaucracy run amok'**

By Bernie Becker

President Obama should back a measure to streamline a Veterans Affairs “bureaucracy run amok,” a House Republican said in the party’s weekly address Saturday.

### **The Hill: Confident Christie finds his mojo**

By Alexandra Jaffe

“I’d love to say I missed you, but I didn’t.” And with that jab to close out an hour-long press conference on Friday, it was clear the gruff, no-nonsense, tough-talking Chris Christie was re-emerging after a damaging few months that may have derailed his White House hopes.

### **The Hill: Obama tells Putin to pull back troops**



By Rebecca Shabad

President Obama called on Russian President Vladimir Putin to pull back his troops from Ukraine's border on Friday during a phone call between the two leaders.

### **The Hill: Port Authority chairman steps down**

By Keith Laing

David Samson, the chairman of the New York and New Jersey Port Authority, has resigned in the wake of a scandal involving lanes being closed on the busiest bridge in the United States.

### **The Hill: Christie: Bridge scandal won't affect 2016**

By Alexandra Jaffe

New Jersey Gov. Chris Christie (R) said he's confident that the George Washington Bridge scandal won't matter to voters if he runs for president in 2016.

### **The Hill: GOP: Predict storms, not climate**

## change

By Pete Kasperowicz

House Republicans want government scientists to focus on predicting storms, not climate change.

## The Hill: Obama didn't attack Syria due to US war-weariness

By Amie Parnes

President Obama said he didn't choose to launch a military strike in Syria not because "it's not worth it" but that "after a decade of war...the United States has limits."

## The Hill: FreedomWorks flips in Neb. Senate race

By Alexandra Jaffe

In a major blow to former Republican state Treasurer Shane Osborn's candidacy for Nebraska Senate, national conservative group FreedomWorks is withdrawing its endorsement and backing his main primary rival, Midland University President Ben Sasse, instead.

**The Washington Post: Senate Democrats struggle to define a message that can save their majority**

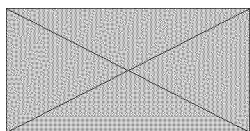
By Karen Tumulty and Paul Kane

Democrats are going into the 2014 midterm elections with their control of the Senate greatly imperiled and with the prospect of an Obama presidency completely hobbled in its final two years.

**The Associated Press: Congress to seek answers on delayed GM recall**

By Diana DeGette

New General Motors CEO Mary Barra has been cooperative with members of Congress investigating why the company did not act sooner to address a potentially deadly defect in some of its small cars, U.S. Rep. Diana DeGette said.



## **Court to weigh challenge over delayed auto safety rule**

By Benjamin Goad

Safety advocates are taking the Obama administration to court over delayed regulations imposing stricter standards for rearview technology in vehicles.

## **Obama: Putin may have 'additional plans'**

By Rebecca Shabad

President Obama said Russian President Vladimir may have "additional plans" in Ukraine and called on him to pull back his troops stationed along the border in an interview that aired Friday.

## **White House welcomes new NATO secretary-general**

By Kristina Wong

The White House issued a statement Friday

welcoming the selection of former Norwegian Prime Minister Jens Stoltenberg as NATO's next secretary-general.

### **Chicago's CTA: 'We anticipate restoring service' this weekend**

By Keith Laing

The agency that operates the Chicago "L" subway system said Friday that it anticipates restoring service to O'Hare International Airport this weekend.

### **Next week: Fourth try on UI**

By Pete Kasperowicz

The Senate will try once again to pass an extension of emergency unemployment benefits, a bill Democrats have so far failed to pass three times this year.

### **US can't 'unilaterally disarm' NSA**

By Julian Hattem

Sen. Marco Rubio (R-Fla.) is criticizing President Obama for trying to “unilaterally disarm” the government’s intelligence capabilities.

### **Opinion: Solving the twin challenges of funding and congestion**

By Kevin DeGood

The Highway Trust Fund is broke. Again. Groundhog Day may have come and gone already, but unfortunately we have seen this scene before.

### **Feds recognize Mich. same-sex marriages despite legal stay**

By Rebecca Shabad

The Justice Department said Friday that it will recognize same-sex marriages that were performed in Michigan last weekend despite the couples now being in legal limbo.

## **Landrieu, Murkowski seek investigation of grid vulnerability leaks**

By Timothy Cama

Sens. Mary Landrieu (D-La.) and Lisa Murkowski (R-Alaska), the leaders of the Senate Energy and Natural Resources Committee, asked the Department of Energy's (DOE) inspector general to investigate possible leaks of sensitive data about vulnerability in the country's electrical grid.

## **Dem group hits back on healthcare in new Senate ads**

By Cameron Joseph

The Democratic group Senate Majority PAC is going on the air in two hotly contested Senate races in Arkansas and Michigan with ads tying Rep. Tom Cotton (R-Ark.) and former Michigan Secretary of State Terri Lynn Land (R) to the billionaire Koch brothers and blasting them on

their healthcare positions.

## **Consumer confidence falls slightly in March**

By Vicki Needham

Consumer confidence dipped slightly in March over concerns about economic growth, which took a hit during the cold winter.

## **White House 'confident' in O-Care website**

By Amie Parnes

Just days before the Affordable Care Act deadline, White House press secretary Jay Carney said Friday the administration is “confident” the healthcare website will be able to handle the volume of users in the final push.

**Forward email**

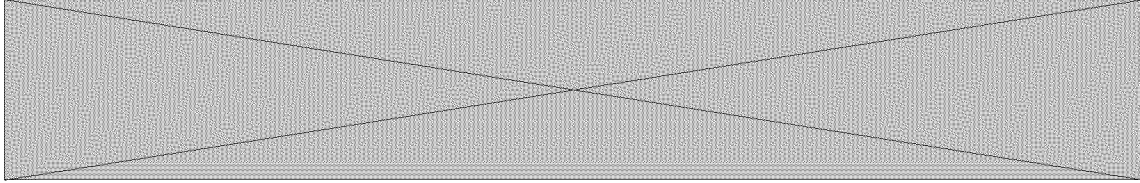
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**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Mon 3/31/2014 4:03:35 PM  
**Subject:** Green Car Report Daily Headlines

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The latest from your friends at GCR:

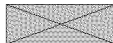
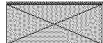
## Volkswagen Shows Off Its 40-Year History Of Electric Cars

Mar 31, 2014 03:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)

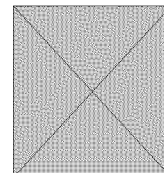
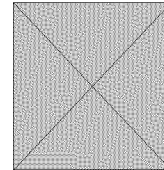


While its new 2015 Volkswagen e-Golf will be the first-ever plug-in electric VW sold in the U.S., the German carmaker has a surprisingly long history of prototype electric cars. Two weeks ago, during a drive event for its VW e-Golf and e-Up production models, along with prototype Golf GTE plug-in hybrids, Volkswagen showed off restored examples of...

[comments](#) | [read more](#)

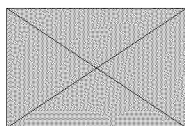


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## 2014 Nissan Leaf Domestic Content: Now Closer To Volt, Focus Electric

Mar 31, 2014 01:48 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



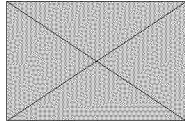
Last fall, we learned that the first year of U.S. production of the Nissan Leaf electric cars, built in Smyrna, Tennessee, had only 15 percent North American content. This year, the numbers are somewhat better--and they bring the Leaf closer to the domestic-content percentage of other plug-in electric vehicles built in the U.S., including the...

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## Why Oil State Texas Turns Out To Be Friendly To Electric Cars

Mar 31, 2014 10:50 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



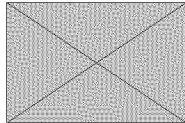
As the land of big pickup trucks and Big Oil, Texas would hardly seem like the kind of place where electric cars could thrive. Yet the Lone Star State is one of the friendliest for plug-in cars which, according to a recent Navigant Research post, have a powerful ally there: utility companies. There are now around 5,000 electric cars registered in...

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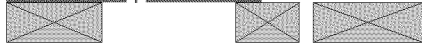
## 2014 Cadillac ELR Recalled For Stability-Control Software Issue

Mar 31, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



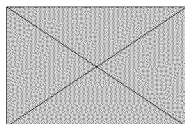
General Motors is recalling most of its 2014 Cadillac ELR luxury range-extended electric coupes for faulty stability-control software. The recall will correct a problem with the diagnostic function of the software that controls the electronic stability control (ESC) in approximately 656 ELRs built between September 26, 2013, and February 14, 2014...

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## Why We Moderate Comments On Green Car Reports

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(John Voelcker)



This site now gets a few hundred

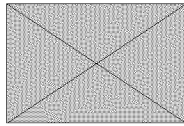
comments a day on our accumulated total of more than 10,000 articles. The vast majority of them are thoughtful, from experienced owners and advocates who want to discuss a new item or vehicle test in more detail. And we're grateful to our many, many commenters, who expand the discussion in ways we couldn't. We've...

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## Massachusetts To Offer Rebates For Plug-In Electric-Car Purchases

Mar 31, 2014 11:00 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



Massachusetts is about to give its residents a reason to plug in. A rebate program for electric-car purchases was announced last week by Governor Deval Patrick, according to the Worcester Telegram & Gazette (via the Sierra Club). The program will provide state residents who buy or lease a new plug-in car with a rebate of up to \$2,500 at the...

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**To:** Wehrly, Linc[wehrly.linc@epa.gov]; Snyder, Jim[Snyder.Jim@epa.gov]; French, Roberts[french.roberts@epa.gov]; Wright, DavidA[Wright.DavidA@epa.gov]; Dalton, Joel[Dalton.Joel@epa.gov]

**From:** Ex. 7

**Sent:** Mon 3/31/2014 4:57:15 PM

**Subject:** RE: VW Off-Cycle GHG Credits Conference Call  
Agenda-33114.docx

To all:

Attached is an agenda for our telephone conversation.

Best regards,

Ex. 7

---

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone:

Cell: (

E-Mail:

**Ex. 7**

**From:** Ex. 7

**Sent:** Friday, March 21, 2014 1:57 PM

**To:** Wehrly, Linc (wehrly.linc@epa.gov); Snyder.jim@Epa.gov; French, Roberts (french.roberts@epa.gov); Wright, DavidA (Wright.DavidA@epa.gov); Dalton, Joel (Dalton.Joel@epa.gov)

**Subject:** VW Off-Cycle GHG Credits Conference Call

To all:

I have added some VW participants and included a call-in number for the EPA/VW call on March 31, 2014 at 1:00 p.m. I am not certain if all participants will see these additions or only the organizer (Jim Snyder). Therefore, the call-in information is provided below.

To join by telephone, call:

**Non-Responsive**

Conference ID: [REDACTED]

My apology if this is a duplication.

Best regards,

**Ex. 7**

---

**Ex. 7**

Engineering and Environmental Office

Volkswagen Group of America, Inc.

Phone:

Cell: (2

E-Mail:

**Ex. 7**

U.S. Environmental Protection Agency / Volkswagen Group of America, Inc. Telephone Conference  
Off-Cycle GHG Credits  
March 31, 2014

1. Agenda
2. Introductions
3. Confirm the opportunity to carryback credits for Model years 2012 and 2013
4. Potential Off-Cycle Credits
  - a. High Efficiency Lighting
  - b. Active Aerodynamic Improvements
  - c. Engine Idle Start-Stop w/ heater
  - d. Engine Idle Start-Stop w/o heater
  - e. Active Transmission Warm-Up
  - f. Active Engine Warm-Up
  - g. Thermal Control Technologies – Glazing
  - h. Thermal Control Technologies – Active Seat Ventilation
  - i. Thermal Control Technologies – Reflective Surface Paint
5. Status of EPA's Review Process
6. Other

**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Mon 3/31/2014 11:09:26 PM  
**Subject:** RE: 2015 Fuel Economy audit  
VGA2015 FEGuide-all rel dates-no-sales-3-31-2014.xlsx

Richard,

Here you go---I didn't see any errors.

I'll run the query tomorrow around 10AM for the data to be sent to DOE---so if you need to make changes, please make them before 10AM or email me.

Dave

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Monday, March 31, 2014 1:44 PM  
**To:** Good, David  
**Subject:** 2015 Fuel Economy audit

Hi Dave;

Just a reminder, we spoke last Thursday and you said you might be able to send me the audit of the Volkswagen Group 2015 fuel economy labels before you sent the information off to Janet on the first of April.

Thanks,

Richard

*Richard E. Thomas*



VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207  
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

EPA com	VERIFY cc	Model Yr	(Mfr Name	Division	(tCarline	Verify Mfr Index	(Mo Eng Displ	# Cyl	
		2015	Volkswage	Audi	A3	VGA	7	1.8	4
		2015	Volkswage	Audi	A3 Cabriol	VGA	6	1.8	4
		2015	Volkswage	Audi	A3 Cabriol	VGA	5	2.0	4
		2015	Volkswage	Audi	A3 quattro	VGA	4	2.0	4
Diesel;		2015	Volkswage	Audi	A6 quattro	VGA	17	3.0	6
Diesel;		2015	Volkswage	Audi	A7 quattro	VGA	18	3.0	6
		2015	Volkswage	Audi	A8	VGA	11	4.0	8
Diesel;		2015	Volkswage	Audi	A8L	VGA	15	3.0	6
		2015	Volkswage	Audi	A8L	VGA	10	4.0	8
		2015	Volkswage	Audi	A8L	VGA	14	6.3	12
Diesel;		2015	Volkswage	Audi	Q5	VGA	16	3.0	6
Diesel;		2015	Volkswage	Audi	Q7	VGA	12	3.0	6
		2015	Volkswage	Audi	R8	VGA	27	4.2	8
		2015	Volkswage	Audi	R8	VGA	29	4.2	8
		2015	Volkswage	Audi	R8 Spyder	VGA	26	4.2	8
		2015	Volkswage	Audi	R8 Spyder	VGA	28	4.2	8
		2015	Volkswage	Audi	RS7	VGA	21	4.0	8
		2015	Volkswage	Audi	S6	VGA	20	4.0	8
		2015	Volkswage	Audi	S7	VGA	19	4.0	8
		2015	Volkswage	Audi	S8	VGA	9	4.0	8
		2015	Volkswage	Audi	TT Coupe	VGA	2	2.0	4
		2015	Volkswage	Audi	TT Roadste	VGA	3	2.0	4
		2015	Volkswage	Bentley	Continent	VGA	24	4.0	8
		2015	Volkswage	Bentley	Continent	VGA	22	4.0	8
		2015	Volkswage	Bentley	Flying Spur	VGA	23	4.0	8
		2015	Volkswage	Volkswage	GTI	VGA	1	2.0	4
		2015	Volkswage	Volkswage	GTI	VGA	8	2.0	4
Diesel;		2015	Volkswage	Volkswage	Touareg	VGA	13	3.0	6

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Auto(AM-S	17	27	20			20.7366	35.2072	25.4423
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Auto(AM-S	22	31	26			28.3669	42.1911	33.2728
Auto(S8)	15	25	19			19.1000	33.5000	23.6806
Auto(S8)	14	24	17			17.3000	31.8000	21.7662
Auto(S8)	14	24	17			17.3000	31.8000	21.7662
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Automated	Manual with	paddles)	2-Wheel DFVGAV02.0	15			GP	Gasoline (F	
Automated	Manual with	paddles)	2-Wheel DFVGAV02.0	15			GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV02.0	15			GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV02.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV03.0NU4			5	DU	Diesel, ultr	
Y	N	A	All Wheel IFVGAV03.0NU4			5	DU	Diesel, ultr	
Y	N	A	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV03.0NU4			5	DU	Diesel, ultr	
Y	N	A	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV06.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV03.0NU4			5	DU	Diesel, ultr	
Y	N	A	All Wheel IFVGAT03.0NU3			5	DU	Diesel, ultr	
Automated	Manual with	paddles)	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
N	N	A	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
N	N	A	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV04.0	10			GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV04.0	10			GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV04.0	10			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV02.0	15			GP	Gasoline (F	
Automated	Manual with	paddles)	All Wheel IFVGAV02.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAV04.0	15			GP	Gasoline (F	
Automated	Manual with	paddles)	2-Wheel DFVGAV02.0	15			GP	Gasoline (F	
N	N	F	2-Wheel DFVGAV02.0	15			GP	Gasoline (F	
Y	N	A	All Wheel IFVGAT03.0NU2			5	DU	Diesel, ultr	

2017-FFP 009541

Annual Fuel Economy	EPA Calculated	Comment	City2 FE (Hwy2 Fuel Economy Combined Fuel Economy)	Low'd City2 FE	Low'd Hwy2 FE	Low'd CorCity2 FE	Unadjusted City2 FE
2100	2100	corrected fuel unit price					
2050	2050	refresh release date, corrected interior volumes, fuel unit price correction					
2200	2200	refreshed release date, interior volume corrected					
2100	2100	carline interior volumes corrected from 2 door to 4 door					
1950	1950						
1950	1950						
2600	2600						
2000	2000						
2600	2600	FUEL AND GHG RATING CORRECTED TO 5					
3350	3350						
2100	2100	Corrected unrounded unadjusted highway and combined CO2 values					
2550	2550						
3350	3350						
4050	4050						
3350	3350						
4050	4050						
3000	3000	highway & combined values corrected					
2850	2850						
2850	2850						
2850	2850	S/S indicator to yes, back to NO.					
2200	2200						
2200	2200						
3000	3000	release date change to March					
3350	3350	data substitution corrected to no for eng code CYCA, release date change to March					
3350	3350	release date change to March					
2050	2050	SMOG corrected to 9 as this is a nationwide Tier 2 BIN 2 and Calif PZEV					
2050	2050						
2450	2450	corrected fuel economy rating to 5					

How much Fuel (Lbs) (Gals) (V) (F) (M) (Y) (Alternative Fuel)  
Hwy2 City2 Comb2 Unr City2 Unr Hwy2 Unr Comb2 Unr Range2 - Fuel2 Us Fuel2 Us Fuel2 Unit Fuel2 Unit



Relative Fuel Efficiency	CO2 Intake	CO2 Exhaust	Combustion CO2	Fuel2 EPA	Description	Intake Val	Exhaust V	Carline CI	Carline CI
					SIDI;	2	23	Subcompa	
					SIDI;	2	23	Subcompa	
					SIDI;	2	23	Subcompa	
					SIDI;	2	23	Subcompa	
						2	25	Midsize Ca	
						2	25	Midsize Ca	
					SIDI;	2	25	Midsize Ca	
						2	26	Large Cars	
					SIDI;	2	26	Large Cars	
					SIDI;	2	26	Large Cars	
						2	231	Small SUV 4WD	
						2	233	Standard SUV 4W	
					SIDI;	2	21	Two Seate	
					SIDI;	2	21	Two Seate	
					SIDI;	2	21	Two Seate	
					SIDI;	2	21	Two Seate	
					SIDI;	2	25	Midsize Ca	
					SIDI;	2	25	Midsize Ca	
					SIDI;	2	25	Midsize Ca	
					SIDI;	2	25	Midsize Ca	
					SIDI;	2	23	Subcompa	
					SIDI;	2	21	Two Seate	
					SIDI;	2	24	Compact C	
					SIDI;	2	23	Subcompa	
					SIDI;	2	25	Midsize Ca	
					SIDI;	2	24	Compact C	
					SIDI;	2	24	Compact C	
						2	233	Standard SUV 4W	

Car/Truck	Calc Appr Sales	Release DEPA FE Label Dates	Unique LaLabel Rec	Relabel	Relabel D
car	Vehicle Specific 5-cycle	2/25/2014	15406	N	N
car	Vehicle Specific 5-cycle	4/2/2014	15407	N	N
car	Vehicle Specific 5-cycle	4/2/2014	15317	N	N
car	Vehicle Specific 5-cycle	1/15/2014	15320	N	N
car	Vehicle Specific 5-cycle	6/10/2014	15458	N	N
car	Vehicle Specific 5-cycle	6/10/2014	15459	N	N
car	Vehicle Specific 5-cycle	5/15/2014	15385	N	N
car	Vehicle Specific 5-cycle	5/15/2014	15456	N	N
car	Vehicle Specific 5-cycle	5/15/2014	15386	N	N
car	Vehicle Specific 5-cycle	5/15/2014	15442	N	N
	Vehicle Specific 5-cycle	6/10/2014	15460	N	N
D	Vehicle Specific 5-cycle	4/2/2014	15408	N	N
car	Vehicle Specific 5-cycle	4/9/2014	15493	N	N
car	Vehicle Specific 5-cycle	4/9/2014	15497	N	N
car	Vehicle Specific 5-cycle	4/9/2014	15492	N	N
car	Vehicle Specific 5-cycle	4/9/2014	15496	N	N
car	Vehicle Specific 5-cycle	4/2/2014	15500	N	N
car	Vehicle Specific 5-cycle	4/2/2014	15466	N	N
car	Vehicle Specific 5-cycle	4/2/2014	15465	N	N
car	Vehicle Specific 5-cycle	5/15/2014	15400	N	N
car	Vehicle Specific 5-cycle	1/15/2014	15302	N	N
car	Vehicle Specific 5-cycle	1/15/2014	15303	N	N
car	Vehicle Specific 5-cycle	3/28/2014	15558	N	N
car	Vehicle Specific 5-cycle	3/28/2014	15557	N	N
car	Vehicle Specific 5-cycle	3/28/2014	15559	N	N
car	Vehicle Specific 5-cycle	4/1/2014	15293	N	N
car	Vehicle Specific 5-cycle	4/1/2014	15313	N	N
D	Vehicle Specific 5-cycle	5/15/2014	15417	N	N

Suppress	Police/Em	Comment	Cyl Deact	Cyl Deact	Var Valve	Var Valve	Var Valve	Var Valve	Energy St
N	N	1.8L Engine	N		Y	CONTINU	CN		
N	N	1.8L Engine	N		Y	CONTINU	CN		
N	N	2.0L Engine	N		Y	CONTINU	CY	Audi Valve	
N	N	2.0L Engine	N		Y	CONTINU	CY	Audi Valve	
N	N		N		N		N		
N	N		N		N		N		
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N		N		N		N		
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Engine Coc	Y	12 to 6 cyl	Y	Intake and	N		
N	N		N		N		N		
N	N	Engine cod	N		N		N		
N	N	Engine Coc	N		Y	CONTINU	CN		
N	N	Engine Coc	N		Y	CONTINU	CN		
N	N	Engine Coc	N		Y	CONTINU	CN		
N	N	Engine Coc	N		Y	CONTINU	CN		
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Generator	N		Y	CONTINU	CN		
N	N	Generator	N		Y	CONTINU	CN		
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	Engine Coc	Y	Deactivat	Y	Continuou	Y	Multi-lobe	
N	N	2.0L Engine	N		Y	CONTINU	CY	Audi Valve	
N	N	2.0L Engine	N		Y	CONTINU	CY	Audi Valve	
N	N	Engine Coc	N		N		N		

Device Descri# Battery# Battery TyBattery TyTotal VoltBatt EnerçBatt SpecBatt CharçComment:# Capacit

alVSet diast valve liftoff liferis (148 valves) designed; it be use conjection later lift ignition for reactivate reactivation as describ

alVSet diast valve liftoff liferis (148 valves) designed; it be use conjection later lift ignition for reactivate reactivation as describ  
tolled and hydraulically adjusted.

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alVSet diast valve liftoff liferis (148 valves) designed; it be use conjection later lift ignition for reactivate reactivation as describ

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alVSet diast valve liftoff liferis (148 valves) designed; it be use conjection later lift ignition for reactivate reactivation as describ

second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

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second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

Motor	Ger	Rated Mot	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Cell V	Off Board	Camless V	Oil Viscosi
					GDI	Spark Ignit			N	5W40 VW
					GDI	Spark Ignit			N	5W40 VW
					GDI	Spark Ignit			N	5W40 VW
					GDI	Spark Ignit			N	5W40 VW
					CRDI	Common F			N	5W30 VW
					CRDI	Common F			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
					CRDI	Common F			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
					GDI	Spark Ignit			N	5W40 VW
					CRDI	Common F			N	5W30 VW
					CRDI	Common F			N	5W30 VW
					GDI	Spark Ignit			N	5W/30, VV
					GDI	Spark Ignit			N	5W/30, VV
					GDI	Spark Ignit			N	5W/30, VV
					GDI	Spark Ignit			N	5W/30, VV
h					GDI	Spark Ignit			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
					GDI	Spark Ignit			N	5W40
					GDI	Spark Ignit			N	5W40
h					GDI	Spark Ignit			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
h					GDI	Spark Ignit			N	5W30 VW
					GDI	Spark Ignit			N	5W40 VW
					GDI	Spark Ignit			N	5W40 VW
					CRDI	Common F			N	5W30 VW

Stop/Start	Stop/Start	Trans in FE	Trans as I	Model Typ	Charge De	Charge De	Charge Su	Charge Su	EPA Calcul
------------	------------	-------------	------------	-----------	-----------	-----------	-----------	-----------	------------

N	No	Auto(AM-5	Auto(AM-5						
N	No	Auto(AM-5	Auto(AM-5						
N	No	Auto(AM-5	Auto(AM-5						
N	No	Auto(AM-5	Auto(AM-5						
Y	Yes	Auto(S8)	Auto(S8)						
Y	Yes	Auto(S8)	Auto(S8)						
Y0700	Yes	Auto(S8)	Auto(S8)						
Y	Yes	Auto(S8)	Auto(S8)						
Y0700	Yes	Auto(S8)	Auto(S8)						
N	No	Auto(S8)	Auto(S8)						
Y	Yes	Auto(S8)	Auto(S8)						
N	No	Auto(S8)	Auto(S8)						
N	No	Auto(AM-5	Auto(AM-5						
N	No	Manual(M	Manual(M						
N	No	Auto(AM-5	Auto(AM-5						
N	No	Manual(M	Manual(M						
Y0700	No	Auto(S8)	Auto(S8)						
Y0700	No	Auto(AM-5	Auto(AM-5						
Y0700	No	Auto(AM-5	Auto(AM-5						
Y0700	No	Auto(S8)	Auto(S8)						
N	No	Auto(AM-5	Auto(AM-5	TT Coupe c					
N	No	Auto(AM-5	Auto(AM-5	TT Coupe c					
Y0700	No	Auto(S8)	Auto(S8)						
Y0700	No	Auto(S8)	Auto(S8)						
Y0700	No	Auto(S8)	Auto(S8)						
N	No	Auto(AM-5	Auto(AM-5						
N	No	Manual(M	Manual(M						
N	No	Auto(S8)	Auto(S8)						

Model Year	MPG City	MPG Hwy	MPG Comb	EPA Calculated Gas GEZ Rating	GHG Rating	#1 Smog R	#1 Mfr Sm	#1 EPA Sm	SmartWay
	34.9				7	7 FVGAV02.0	9		
	36.2				7	7 FVGAV02.0	9		
	34.3				6	6 FVGAV02.0	9		
	35.2				7	7 FVGAV02.0	9		
	37.7				7	6 FVGAI03.0	5		
	37.7				7	6 FVGAI03.0	5		
	28.0				5	5 FVGAV04.0	5		
	36.9				7	6 FVGAI03.0	5		
	27.6				5	5 FVGAV04.0	5		
	21.1				4	4 FVGAV06.3	5		
	34.3				7	5 FVGAI03.0	5		
	28.1				5	4 FVGAT03.0	5		
	20.7				4	4 FVGAV04.2	5		
	17.2				2	2 FVGAV04.2	5		
	20.7				4	4 FVGAV04.2	5		
	17.2				2	2 FVGAV04.2	5		
	24.1				4	4 FVGAV04.0	5		
	25.4				5	5 FVGAV04.0	5		
	25.4				5	5 FVGAV04.0	5		
	25.0				5	5 FVGAV04.0	5		
	33.3				6	6 FVGAV02.0	5		
	33.3				6	6 FVGAV02.0	5		
	23.7				4	4 FVGAV04.0	5		
	21.9				4	4 FVGAV04.0	5		
	21.9				4	4 FVGAV04.0	5		
	35.9				7	7 FVGAV02.0	9		
	35.8				7	7 FVGAV02.0	9		
	29.6				5	5 FVGAT03.0	5		



Signal 10 Pull #56 Test #6 for Test Group A) #3 Smog R #3 Mfr Sm #3 EPA Sm SmartWay #4 Smog R #4 Mfr Sm

Highway Miles Per Gallon (City/Highway/Combined) EPA Fuel Economy (City/Highway/Combined) EPA CO2 (City/Highway/Combined) EPA CO2 (City/Highway/Combined) EPA CO2 (City/Highway/Combined)

500		379	267	328
750		362	256	314
0		379	280	334
500		366	271	323
1250		416	267	349
1250		416	267	349
	2000	484	299	401
1000		426	280	360
	2000	492	310	410
	5250	640	403	534
500		430	328	385
	1750	541	369	464
	5750	656	394	538
	9250	772	439	622
	5750	656	394	538
	9250	772	439	622
	4000	573	336	466
	3250	531	330	441
	3250	531	330	441
	3250	534	331	442
0		395	284	345
0		395	284	345
	4000	580	347	475
	5750	638	370	517
	5750	638	370	517
750		358	271	319
750		355	258	311
	1250	517	351	442

2017-FFP\_009554







mined)









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**From:** Linda Carrizosa  
**Sent:** Tue 4/1/2014 12:05:52 AM  
**Subject:** April 16, 2014CaFCP Steering Team Meeting RSVP reminder and meeting information  
[Diamond Bar Hotels.doc](#)

Dear Steering Team Members:

Our April 16 Steering Team meeting is coming up fast and I would like to remind you of some general meeting information and to request your official RSVP.

### General Meeting Info:

Date and Time: 4/16/14 Wednesday: 8:30am - 11:30am PDT.

Location: South Coast AQMD, 21865 East Copley Drive, Diamond Bar, CA 91765, GB conference room. Website: <http://www.aqmd.gov>

Important reminders: Lunch will be on your own in the cafeteria at the Blue Sky Café. Please note that the cafeteria accepts only cash, so make sure you bring cash with you.

**RSVP: by Thursday, April 10, 2014, or sooner!**

If you are attending the ST Meetings on April 16<sup>th</sup>, please RSVP on MR at:  
[http://cafcpmembers.org/membersonly/st20140416\\_rsvp](http://cafcpmembers.org/membersonly/st20140416_rsvp).

If you have any questions or need any assistance, please don't hesitate to contact me.

Please see the attached hotel and airport information for your convenience. As we get closer to the meeting date, you will be notified of availability of the meeting materials.

Thank you.

**Linda Carrizosa** | Administrative Assistant | CaFCP

D 916 371 2870 | F 916 375 8005 | [lcarrizosa@cafcfp.org](mailto:lcarrizosa@cafcfp.org)

3300 Industrial Blvd., Ste. 1000, West Sacramento, CA 95691 | [www.cafcfc.com](http://www.cafcfc.com)

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Allen, Gregory[Gregory.Allen@vw.com]; Thomas, Richard (EEO)[Richard.Thomas@vw.com]; Rodgers, William (EEO)[William.Rodgers@vw.com]  
**From:** Giles, Michael (EEO)  
**Sent:** Tue 4/1/2014 1:31:21 PM  
**Subject:** VW Group - Decision Information for Q3 + Q3 quattro

Hello Jim,

Today we uploaded two decision requests for new carlines in MY 2015 test group FVGAV02.0AUA (both with automatic transmission):

<b>Carline</b>	<b>Vehicle + configuration</b>	<b>Purpose</b>
Q3 quattro exhaust vehicle for test group	FAUA-Q3Q 0	EDV – New carline and new worst case
Q3	FAUA-Q3F 0	FEDV - New carline (2WD)

Note - If not selected, the Q3 (2WD) will require a manufacturer confirmatory Highway test due to high FE for weight class.

We plan to submit a running change and revised application to reflect the new carlines. In addition, we plan to include a third new carline (Audi S3) along with tests as an FEDV. We expect to submit those fuel economy tests for the S3 in the next week or so, as well as the complete running change.

Please advise of the confirmatory decision or call me if there are any questions.

Michael Giles

Certification Engineer – EEO

VW Group of America

(248) 754-4229

**To:** Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Good, David  
**Sent:** Tue 4/1/2014 5:59:32 PM  
**Subject:** RE: 2015 Fuel Economy audit

Richard,

See may answer below:

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Tuesday, April 01, 2014 7:18 AM  
**To:** Good, David  
**Subject:** RE: 2015 Fuel Economy audit

Thank you Dave, I corrected three labels to reflect a 15% maximum percentage of ethanol, but the release date is not until June anyway.

I have one additional question on carline names. If a new model is available as all-wheel drive and front wheel drive and we don't make a distinction in the carline name will Verify amend the carline name automatically with an "AWD" and a "2WD" to distinguish them in the guide? D. Good Ans: No, that is something I must do by hand. Please add "AWD" to the carline name as soon as possible, e.g. at the start of the model year---or at the next model year if you already have been issued a certificate without "AWD" added to the carline name.

Thanks,

Richard

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Monday, March 31, 2014 7:09 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: 2015 Fuel Economy audit

Richard,

Here you go---I didn't see any errors.

I'll run the query tomorrow around 10AM for the data to be sent to DOE---so if you need to make changes, please make them before 10AM or email me.

Dave

**From:** Thomas, Richard (EEO) [<mailto:Richard.Thomas@vw.com>]  
**Sent:** Monday, March 31, 2014 1:44 PM  
**To:** Good, David  
**Subject:** 2015 Fuel Economy audit

Hi Dave;

Just a reminder, we spoke last Thursday and you said you might be able to send me the audit of the Volkswagen Group 2015 fuel economy labels before you sent the information off to Janet on the first of April.

Thanks,

Richard

*Richard E. Thomas*  
VOLKSWAGEN Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326  
Engineering and Environmental Office (EEO)  
Phone: 248 754-4213  
Fax: 248 754-4207



[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Good, David[good.david@epa.gov]  
**From:** Thomas, Richard (EEO)  
**Sent:** Tue 4/1/2014 6:04:19 PM  
**Subject:** RE: 2015 Fuel Economy audit

Not a problem Dave; we usually add the word “quattro” for AWD to carline names if there is also a front wheel drive version available. I just noticed in the guide that many manufacturers sometimes have a AWD, 4WD or 2WD added to the carline name. I won’t create any additional work for ya.

Thanks,

Richard

**From:** Good, David [mailto:good.david@epa.gov]  
**Sent:** Tuesday, April 01, 2014 2:00 PM  
**To:** Thomas, Richard (EEO)  
**Subject:** RE: 2015 Fuel Economy audit

Richard,

See may answer below:

**From:** Thomas, Richard (EEO) [mailto:Richard.Thomas@vw.com]  
**Sent:** Tuesday, April 01, 2014 7:18 AM  
**To:** Good, David  
**Subject:** RE: 2015 Fuel Economy audit

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Richard

*Richard E. Thomas*

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Auburn Hills, MI 48326

Engineering and Environmental Office (EEO)

Phone: 248 754-4213

Fax: 248 754-4207

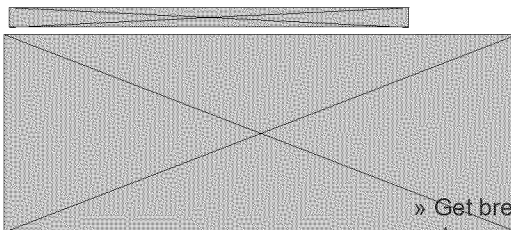
[Richard.Thomas@VW.com](mailto:Richard.Thomas@VW.com)

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 4/1/2014 8:33:54 PM  
**Subject:** DAILY: GM hires attorney Feinberg to help with response to accident victims, Barra testifies | U.S. sales rise 6% as spring momentum builds | End of an era at Fiat

Today's most read story

**U.S. sales rise 6% as spring momentum builds**

April 1, 2014



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## TOP NEWS

### **THE GM RECALL** **GM hires attorney Feinberg to help with response to accident victims, Barra says**

UPDATED: 4/1/14 3:43 pm ET - adds more testimony, gallery

12:40 pm U.S. ET | Apr 1

General Motors has hired attorney Kenneth Feinberg to help the company in its response to the families of victims of accidents involving cars that have been recalled for faulty ignition switches, GM CEO Mary Barra told a congressional panel today. ... » [READ](#)

### **MARCH U.S. AUTO SALES** **U.S. sales rise 6% as spring momentum builds**

UPDATED: 4/1/14 3:57 pm ET

8:00 am U.S. ET | Apr 1

U.S. light-vehicle sales rose 6 percent in March, exceeding analysts' forecasts and signaling the auto industry has shaken off its sluggish start to 2014. The

seasonally adjusted sales rate -- a broad gauge of the industry's health -- surged to 16.4 million units from 15.3 million units a year ago. ... » [READ](#)

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### **Gartner Presenting at the TLS Auto Customer Centricity Summit**

**Technology Leadership Will Determine Industry's Future - Thilo Koslowski, VP & Lead Auto Analyst** will provide insights on how technology-enabled vehicles will impact the automotive customer experience, and how automotive companies have to expand their value proposition moving beyond their traditional focus, conquering new ones like e-commerce and mobility solutions. For more info visit [www.tlsummits.com](http://www.tlsummits.com).

## **Victims' families meet with Barra, call for legislation**

UPDATED: 4/1/14 1:55 pm ET - new story  
8:04 am U.S. ET | Apr 1

General Motors CEO Mary Barra held a tearful meeting in Washington late on Monday with about 20 relatives of people who died in GM vehicles that have been subject to recalls and investigations into faulty ignition

switches. ... » [READ](#)

## **THE GM RECALL** **Critical question went unasked by NHTSA, unanswered by GM**

6:45 am U.S. ET | Apr 1

At this week's congressional hearings, watch for General Motors CEO Mary Barra to apologize deeply for her company's handling of deadly defects in its ignition switches. And watch for David Friedman, the nation's top auto-safety regulator, to make no apologies at all. ...

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## **Prices of GM used cars unhurt by recall**

12:01 am U.S. ET | Mar 31

Wholesale prices of General Motors vehicles with faulty ignition switches are unscathed by the highly publicized recall of the vehicles, analysts say. That's because the

recalled 1. ... » [READ](#)

### **ON THE BLOGS**

**JENNIFER CLARK**

**End of an era at Fiat**

## Daimler mulls production of Mercedes cars in Russia

[» READ](#)

9:51 am U.S. ET | Apr 1

Daimler is examining whether to build Mercedes cars in Russia as it seeks to expand its global production base and overtake BMW and Audi to become the world's top-selling luxury automaker. ... [» READ](#)

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**NHTSA closes Tesla fire inquiry as Model S gets new battery shield**

**GM issues stop-delivery order on some 2013-14 Chevrolet Cruze compacts**

**BMW X7 poised to make S.C. plant an even bigger manufacturing powerhouse**

**Barra vows 'world class process' for GM vehicle safety**

**Toyota's major midcycle revamp aims to keep Camry on top**

## Viral video rankings for week of 4/1/2014

### Subaru befriends police, Ford talks manure

12:01 am U.S. ET | Apr 1

Even cops love Subaru. Or at least that's what the automaker's latest viral hit would like you to think. ... [» Watch the videos](#)

[» 4/1 -- Linking Goals to Execution by Microsoft](#)  
[» 4/8 -- Social Media & Reputation Tips](#)

## Ukraine crisis makes Andersson's turnaround of AvtoVAZ tougher

[» 4/22 -- Consumer Lifecycle Management by HP](#)

12:01 am U.S. ET | Mar 31

**More assembly in S.C., but BMW isn't ready for American engines**

12:01 am U.S. ET | Mar 31

**Volvo aims for 1 million car sales, chairman says**

3:16 am U.S. ET | Apr 1

**BMW's March surge narrows Mercedes' U.S. luxury sales lead**

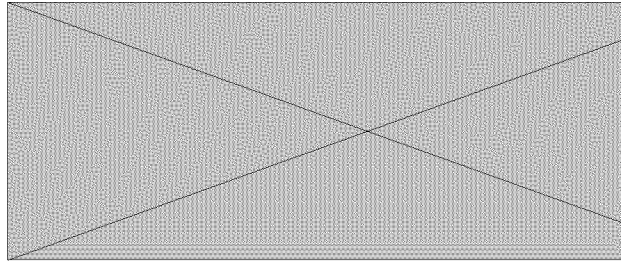
3:56 pm U.S. ET | Apr 1

**Chrysler Canada sales sales climb 2% in March**

12:05 pm U.S. ET | Apr 1

» April 7, 2014 -  
PACE Awards  
» May 13, 2014 -  
Marketing Seminar - Los Angeles  
» June 3, 2014 -  
Rising Stars  
» June 4, 2014 -  
ANE Congress  
» Sept. 23, 2014 -  
NY Marketing Seminar





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Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207

..

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Tue 4/1/2014 10:40:13 PM  
**Subject:** U.S. SALES REPORT: March delivers a sales rebound -- and more; Incentives strip some luster from 'good growth'

April 1, 2014

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## **March delivers a sales rebound and more as confidence returns**

### **Incentives strip some luster from 'good growth'**

4:44 pm U.S. ET | Apr 1

The snow melted. Car buyers dug themselves out. And the U.S. auto industry dragged itself back to first-quarter growth with a 6 percent sales increase in March. The 1.5 million light vehicles sold in March pushed the seasonally adjusted annualized selling rate to 16.4 million -- the best SAAR in four months and the second-highest in seven years. ...

» [READ](#)

## **GM's March sales gain 4% with boost from big pickups**

4:55 pm U.S. ET | Apr 1

Aided by increased sales of full-sized pickups, General Motors' U.S. light-vehicle sales rose 4 percent in March from a year earlier to 256,047 units. GM said that its retail sales were up 7 percent and that it had gained retail market share.

... » [READ](#)

## **Toyota sales rise 5% on strength of Camry**

3:47 pm U.S. ET | Apr 1

## **Ford advances 3% after 'strong' finish**

2:18 pm U.S. ET | Apr 1

## **Accord, Pilot drag down Honda**

4:16 pm U.S. ET | Apr 1

## **Ram pickup outsells Silverado for first time since 1999**

4:01 pm U.S. ET | Apr 1

ON THE BLOGS

[JESSE SNYDER](#)

**OK, the scary part is  
over**

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## **Pickup, Jeep sales push Chrysler up 13%; monthly streak reaches 48**

11:39 am U.S. ET | Apr 1

## **Nissan, Infiniti report solid sales gains**

3:42 pm U.S. ET | Apr 1

## **BMW's March surge narrows Mercedes' U.S. luxury sales lead**

3:56 pm U.S. ET | Apr 1

## **Canadian auto sales nudge slightly higher in March**

12:05 pm U.S. ET | Apr 1

## **U.S. sales rise 6% as spring momentum builds**

8:00 am U.S. ET | Apr 1

### **WINNERS AND LOSERS**

% change in sales among brands

Winners	March	Losers	March	Winners 3 mos.	Losers	3 mos.
1 Maserati	341.7%	1 Mini	-39.8%	1 Maserati	331.3%	1 Mini -38.4%
2 Mitsubishi	70.2%	2 Chrysler Division	-22.9%	2 Jeep	44.5%	2 Scion -11.7%
3 Jeep	46.9%	3 Smart	-16.6%	3 Lincoln	35.9%	3 Volkswagen division -11.1%
4 Lincoln	31.4%	4 Scion	-8.0%	4 Jaguar	31.5%	4 Volvo -9.3%
5 Jaguar	29.0%	5 Cadillac	-6.3%	5 Ram	27.3%	5 Chrysler Division -9.0%

### **Top Selling Light Vehicles**

	March	3 mos.
1 Ford F series	70,940	Ford F series 173,3
2 Ram	42,532	Chevrolet Silverado 107,7
3 Chevrolet Silverado	42,247	Ram 96,90
4 Toyota Camry	41,953	Toyota Camry 94,28
5 Nissan Altima	35,921	Nissan Altima 89,28
6 Honda Accord	33,962	Honda Accord 79,18
7 Ford	32,963	Toyota 77,73

□

	<b>Fusion</b>		<b>Corolla/ Matrix</b>	
<b>8</b>	<b>Toyota Corolla/ Matrix</b>	29,685	<b>Ford Fusion</b>	77,57
<b>9</b>	<b>Ford Escape</b>	28,701	<b>Ford Escape</b>	71,30
<b>10</b>	<b>Honda CR-V</b>	28,657	<b>Honda Civic</b>	71,09

		<b>March</b>		<b>3 mos.</b>
<b>1</b>	<b>Toyota Camry</b>	41,953	<b>Toyota Camry</b>	94,28
<b>2</b>	<b>Nissan Altima</b>	35,921	<b>Nissan Altima</b>	89,28
<b>3</b>	<b>Honda Accord</b>	33,962	<b>Honda Accord</b>	79,18
<b>4</b>	<b>Ford Fusion</b>	32,963	<b>Toyota Corolla/ Matrix</b>	77,73
<b>5</b>	<b>Toyota Corolla/ Matrix</b>	29,685	<b>Ford Fusion</b>	77,57
<b>6</b>	<b>Honda Civic</b>	27,697	<b>Honda Civic</b>	71,09
<b>7</b>	<b>Chevrolet Cruze</b>	26,521	<b>Chevrolet Cruze</b>	65,18
<b>8</b>	<b>Ford Focus</b>	23,974	<b>Hyundai Elantra</b>	53,23
<b>9</b>	<b>Hyundai Elantra</b>	21,518	<b>Ford Focus</b>	51,90
<b>10</b>	<b>Nissan Sentra</b>	19,323	<b>Chevrolet Malibu</b>	48,13

		<b>March</b>		<b>3 mos.</b>
<b>1</b>	<b>Ford F series</b>	70,940	<b>Ford F series</b>	173,3
<b>2</b>	<b>Ram</b>	42,532	<b>Chevrolet Silverado</b>	107,7
<b>3</b>	<b>Chevrolet Silverado</b>	42,247	<b>Ram</b>	96,90
<b>4</b>	<b>Ford Escape</b>	28,701	<b>Ford Escape</b>	71,30
<b>5</b>	<b>Honda CR-V</b>	28,657	<b>Honda CR-V</b>	67,64
<b>6</b>	<b>Chevrolet Equinox</b>	19,939	<b>Chevrolet Equinox</b>	56,07
<b>7</b>	<b>Toyota RAV4</b>	19,733	<b>Toyota RAV4</b>	53,06
<b>8</b>	<b>Nissan Rogue</b>	19,420	<b>Nissan Rogue</b>	50,44
<b>9</b>	<b>Ford Explorer</b>	19,334	<b>Ford Explorer</b>	46,06
<b>10</b>	<b>GMC</b>	16,863	<b>GMC</b>	42,21

□

Table sorted by year-to-date sales

	Mar. 2014	Mar. 2013	% change	3 mos. 2014	3 mos. 2013	% change
Buick	20,428	18,007	13%	52,898	47,620	11%
Cadillac	14,765	15,751	-6%	39,588	42,712	-7%
Chevrolet	179,681	173,859	3%	452,683	469,704	-4%
GMC	41,173	38,333	7%	104,468	104,927	0%
General Motors	<b>256,047</b>	<b>245,950</b>	<b>4%</b>	<b>649,637</b>	<b>664,963</b>	<b>-2%</b>
Ford division	234,448	228,818	3%	558,657	580,917	-4%
Lincoln	8,969	6,825	31%	21,603	15,899	36%
Ford Motor Co.	<b>243,417</b>	<b>235,643</b>	<b>3%</b>	<b>580,260</b>	<b>596,816</b>	<b>-3%</b>
Lexus	28,593	23,190	23%	65,085	56,740	15%
Scion	5,917	6,432	-8%	14,457	16,377	-12%
Toyota Division	180,838	175,720	3%	441,455	456,327	-3%
Toyota/Scion	186,755	182,152	3%	455,912	472,704	-4%
Toyota Motor Sales	<b>215,348</b>	<b>205,342</b>	<b>5%</b>	<b>520,997</b>	<b>529,444</b>	<b>-2%</b>
Chrysler Division	26,140	33,905	-23%	72,483	79,684	-9%
Dodge	60,575	59,885	1%	145,224	158,751	-9%
Ram	44,479	34,540	29%	100,993	79,354	27%
Dodge/Ram	105,054	94,425	11%	246,217	238,105	3%
Fiat	4,738	3,807	25%	11,425	9,612	19%
Jeep	57,983	39,469	47%	145,839	100,951	45%
Chrysler Group***	<b>193,915</b>	<b>171,606</b>	<b>13%</b>	<b>475,964</b>	<b>428,352</b>	<b>11%</b>
Infiniti	12,494	11,103	13%	31,221	27,376	14%
Nissan Division	136,642	126,623	8%	323,745	290,905	11%
Nissan North America	<b>149,136</b>	<b>137,726</b>	<b>8%</b>	<b>354,966</b>	<b>318,281</b>	<b>12%</b>
Acura	15,580	14,100	11%	37,948	34,953	9%
Honda Division	117,738	121,938	-3%	287,406	302,698	-5%
American Honda Motor Co.	<b>133,318</b>	<b>136,038</b>	<b>-2%</b>	<b>325,354</b>	<b>337,651</b>	<b>-4%</b>
Hyundai division	67,005	68,306	-2%	160,013	164,330	-3%
Kia	54,777	49,125	12%	133,006	126,932	5%
Hyundai-Kia	<b>121,782</b>	<b>117,431</b>	<b>4%</b>	<b>293,019</b>	<b>291,262</b>	<b>1%</b>
Audi	14,246	13,253	8%	35,228	34,186	3%
Bentley	280	206	36%	650	574	13%
Lamborghini*	59	57	4%	177	171	4%
Porsche	3,808	3,486	9%	10,136	9,649	5%
VW division	36,717	37,704	-3%	87,323	98,178	-11%
VW Group Of America	<b>55,110</b>	<b>54,706</b>	<b>1%</b>	<b>133,514</b>	<b>142,758</b>	<b>-7%</b>
Subaru	<b>44,479</b>	<b>36,701</b>	<b>21%</b>	<b>112,388</b>	<b>92,527</b>	<b>22%</b>
BMW division	32,107	27,078	19%	72,377	64,902	12%
Mini	3,655	6,071	-40%	8,657	14,055	-38%
Rolls-Royce*	75	71	6%	225	213	6%
BMW Group	<b>35,837</b>	<b>33,220</b>	<b>8%</b>	<b>81,259</b>	<b>79,170</b>	<b>3%</b>
Maybach	-	2	-100%	-	6	-100%
Mercedes-Benz	29,316	26,176	12%	77,238	73,024	6%
Smart USA	775	929	-17%	2,237	2,193	2%
Daimler AG	<b>30,091</b>	<b>27,107</b>	<b>11%</b>	<b>79,475</b>	<b>75,223</b>	<b>6%</b>
Mazda	<b>34,903</b>	<b>32,028</b>	<b>9%</b>	<b>78,058</b>	<b>78,282</b>	<b>0%</b>
Mitsubishi	<b>8,996</b>	<b>5,286</b>	<b>70%</b>	<b>19,840</b>	<b>15,996</b>	<b>24%</b>
Jaguar	1,816	1,408	29%	4,715	3,585	32%
Land Rover	4,399	4,314	2%	13,079	12,419	5%

**Jaguar Land Rover N.A.**

<b>Volvo Cars N.A.</b>	<b>5,915</b>	<b>5,365</b>	<b>10%</b>	<b>13,698</b>	<b>15,107</b>	<b>-9%</b>
<b>Tesla*</b>	<b>1,507</b>	<b>1,500</b>	<b>1%</b>	<b>6,016</b>	<b>5,990</b>	<b>0%</b>
<b>Maserati</b>	<b>963</b>	<b>218</b>	<b>342%</b>	<b>2,368</b>	<b>549</b>	<b>331%</b>
<b>Suzuki</b>	<b>-</b>	<b>2,696</b>	<b>-100%</b>	<b>-</b>	<b>5,946</b>	<b>-100%</b>
<b>Other**</b>	<b>291</b>	<b>284</b>	<b>3%</b>	<b>873</b>	<b>852</b>	<b>3%</b>
<b>U.S. LIGHT VEHICLE</b>	<b>1,537,270</b>	<b>1,454,569</b>	<b>6%</b>	<b>3,745,480</b>	<b>3,695,173</b>	<b>1%</b>

\*Estimate

\*\*Includes estimates for Aston Martin, Ferrari and Lotus

\*\*\*Fiat S.p.A. purchased the remaining 41.46% stake in Chrysler Group from the UAW's VEBA Trust on Jan. 20, 2014.

**Highlights**

<b>Mfgr. highest volume - Mar.</b>	<b>GM</b>	<b>256,047</b>	<b>Mfgr. highest volume - 3 mos.</b>	<b>GM</b>	<b>649,637</b>
<b>Mfgr. gained the most volume - Mar.</b>	<b>Chrysler Group</b>	<b>22,309</b>	<b>Mfgr. gained the most volume - 3 mos.</b>	<b>Chrysler Group</b>	<b>47,612</b>
<b>Mfgr. lost the most volume - Mar.</b>	<b>American Honda</b>	<b>(2,720)</b>	<b>Mfgr. lost the most volume - 3 mos.</b>	<b>Ford Motor Co.</b>	<b>(16,556)</b>
<b>Mfgr. highest % increase - Mar.</b>	<b>Maserati</b>	<b>342%</b>	<b>Mfgr. highest % increase - 3 mos.</b>	<b>Maserati</b>	<b>331%</b>
<b>Mfgr. biggest % drop - Mar.</b>	<b>American Honda</b>	<b>-2%</b>	<b>Mfgr. biggest % drop - 3 mos.</b>	<b>Volvo</b>	<b>-9%</b>

<b>Brand highest volume - Mar.</b>	<b>Ford Motor Co.</b>	<b>234,448</b>	<b>Brand highest volume - 3 mos.</b>	<b>Ford</b>	<b>558,657</b>
<b>Brand gained the most volume - Mar.</b>	<b>Jeep</b>	<b>18,514</b>	<b>Brand gained the most volume - 3 mos.</b>	<b>Jeep</b>	<b>44,888</b>
<b>Brand lost the most volume - Mar.</b>	<b>Chrysler</b>	<b>(7,765)</b>	<b>Brand lost the most volume - 3 mos.</b>	<b>Ford</b>	<b>(22,260)</b>
<b>Brand highest % increase - Mar.</b>	<b>Maserati</b>	<b>342%</b>	<b>Brand highest % increase - 3 mos.</b>	<b>Maserati</b>	<b>331%</b>
<b>Brand biggest % drop - Mar.</b>	<b>Mini</b>	<b>-40%</b>	<b>Brand biggest % drop - 3 mos.</b>	<b>Mini</b>	<b>-38%</b>

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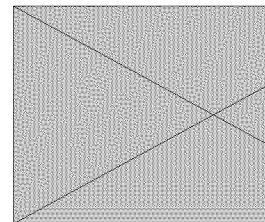
Automotive News | 1155 Gratiot Ave., Detroit, Michigan, 48207

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
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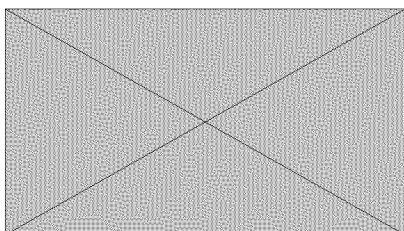
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## On-Vehicle Cameras Watch Out for Drivers by Watching Them

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Continental shows off two systems in the works that are designed to combat driver distraction, inattentiveness and drowsiness.

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As part of our commitment to continually provide our customers with design-related resources, we created the Protomold Demo Mold. This simulated mold demonstrates specific mold and part features we refer to in our ProtoQuote® interactive quotes. [Request](#) a no cost Demo Mold with mold terminology glossary today.

## Autoline Daily



NHTSA Mandates Backup Cameras; New Mercedes Sprinter Van; Driving a CNG Ford F-150

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This white paper details how to anticipate and mitigate the risks of potential supply chain disruptions. Using five out-of-the-ordinary scenarios, it describes what can be done to prepare for disruptions and how to mitigate their effects after the event.

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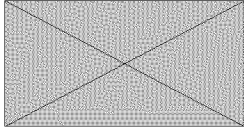
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## Gallery: 2014 Ward's 10 Best Interiors Nominee, Dodge Durango Citadel

The redesigned '14 Dodge Durango Citadel is among several well-equipped 3-row utility vehicles competing this year as part of *Ward's 10 Best Interiors*.

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**Register Now for the 2014 WardsAuto Interiors**

### **Conference**

This May 21 event in Dearborn, MI, is jam-packed with breakout sessions, keynote speeches (GM's Ed Welburn and Chrysler's Klaus Busse), supplier exhibits and more – all laser-focused on the vehicle interior. Check out the agenda at [AutoInteriors.com](http://AutoInteriors.com) and [register today](#).

## Honda Aims for Higher Lease Ratio

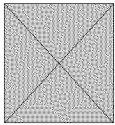
Honda has a much lower lease ratio, 25%, than Acura's 40%-42%, a top company official says.

[FULL ARTICLE](#)

## Video: Cadillac ELR, Judging for 2014 Ward's 10 Best Interiors

*WardsAuto's* Tom Murphy shares his thoughts on the new Cadillac ELR, a nominee in the *2014 Ward's 10 Best Interiors* competition.

## Mary Barra's Leadership Not for Faint of Heart



### **FINAL INSPECTION BLOG**

GM's faulty-ignition crisis, though unfortunate, presents Barra with a teachable moment, as all eyes focus on the new CEO to see if she has the right stuff to lead the automaker through this crucial time.

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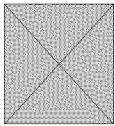
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## **BMW 3.0L Diesel Smooth, Powerful, 'Remarkable'**

BMW diesel engine chief Peter Nefischer says the N57's top design priorities were efficiency, compact packaging, low emissions and the best possible power-to-weight ratio.

[FULL ARTICLE](#)

## **Who Does Tesla Want to Buy?**



### **FINAL INSPECTION BLOG**

Analysts now define Tesla as a technology company, not an automaker. As a result, the company's market capitalization is more than \$30 billion.

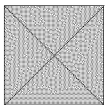
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## **Generous Subsidies Generate EV Appeal in South Korea**

As EV sales mount, Korea consumers will have more choices. Virtually all of the 22 car brands imported into the country offer an electrified vehicle.

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## **Special Report: GM's Recall Crisis**



Continuing coverage of General Motors' ignition-switch recall, plus insight and opinion from *WardsAuto* editors and analysts.

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## **Video: Lexus IS F Sport, Judging for 2014 Ward's 10 Best Interiors**

*WardsAuto's* Christie Schweinsberg shares her thoughts on the new Lexus IS F sport, a nominee in the 2014 *Ward's 10 Best Interiors* competition.

## **Test Drive: A3 Gets More Audi-Like With**

## Options Added to Audi A3 Sedan

The Audi A3's exterior was inspired by a "tailor-made dinner jacket," while the interior is designed to be "clear, logical and timeless," but can be dressed up with a few options.

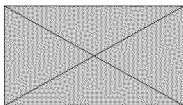
The new sedan starts at \$29,900 with an award-winning 1.8L engine and reasonably equipped. But buyers will have to spend a bit more to get the full Audi treatment.

[FULL ARTICLE](#)

## WardsAuto Poll

What's GM's next best move in addressing its ignition-switch recall scandal? Vote in our latest poll.

## VideoWire



Illinois May Lift Ban on Sunday Sales; Toyota Financials in Good Shape Despite Fine

## Chrysler 200 Designers Think Outside the Box

Chrysler 200 exterior designer says team wanted to craft a car that "got people's attention."

[FULL ARTICLE](#)

## Video: Nissan Versa Note, Judging for 2014 Ward's 10 Best Interiors

WardsAuto's Tom Murphy shares his thoughts on the new Nissan Versa Note, a nominee in the 2014 Ward's 10 Best Interiors competition.

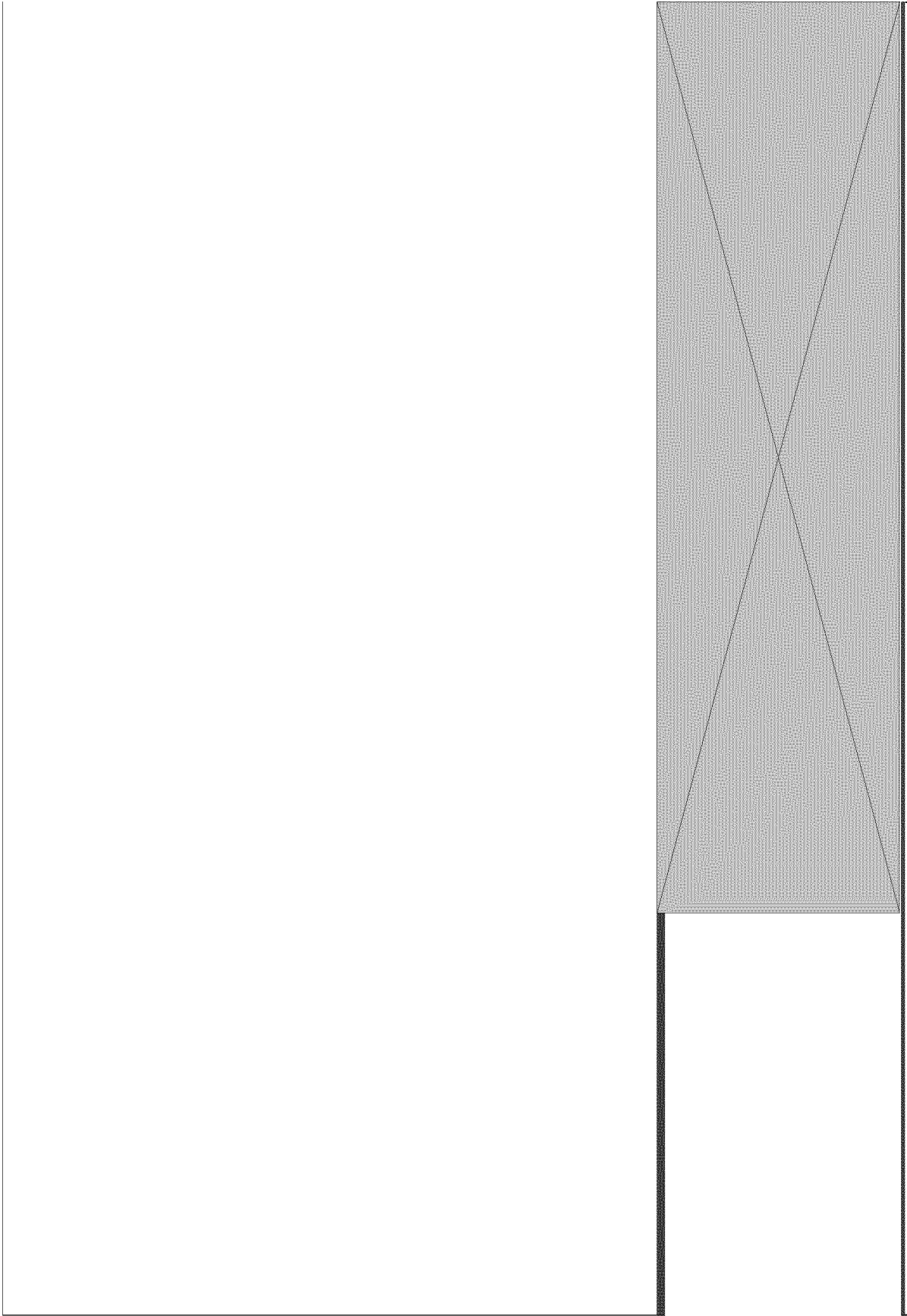
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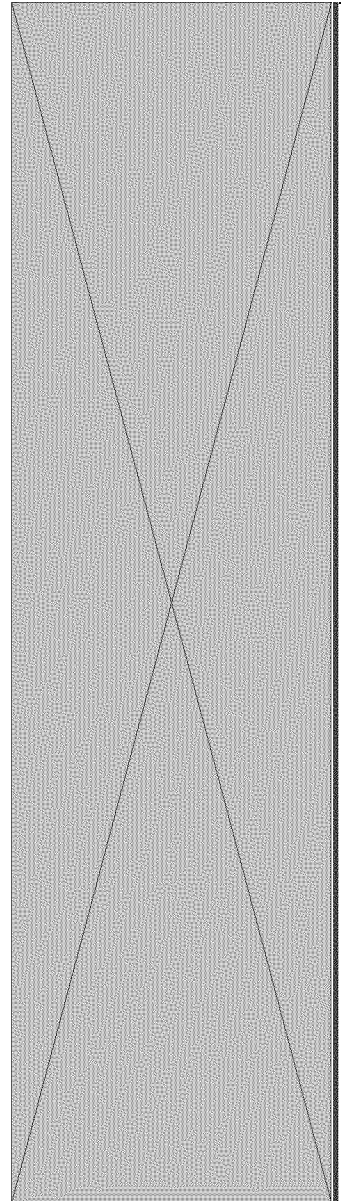
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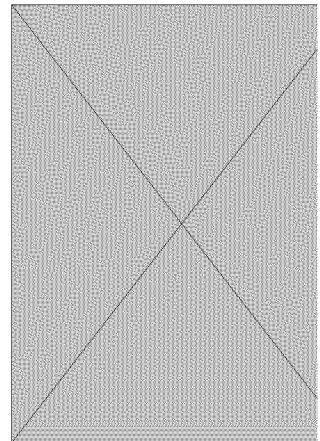
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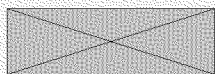


This white paper details how to anticipate and mitigate the risks of potential supply chain disruptions. Using five out-of-the-ordinary scenarios, it describes what can be done to prepare for disruptions and how to mitigate their effects after the event.

**[Download "Supply Chain Management: What You Don't See Can Hurt You" Whitepaper Now!](#)**

Bringing new vehicles to market has never been more challenging. Not only are new vehicles more complex than ever before, but supply chains are stretched, consumers are more demanding and even small delays can cost millions of dollars per model.

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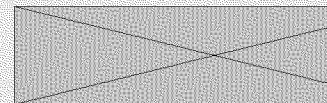
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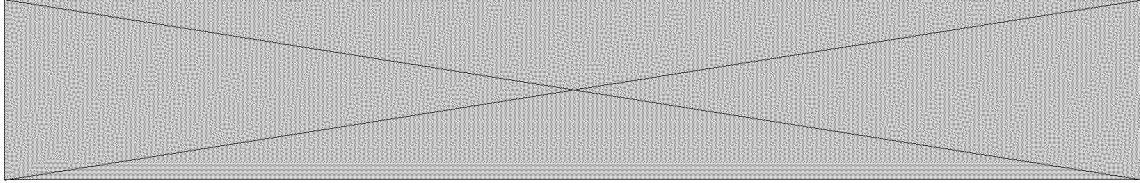
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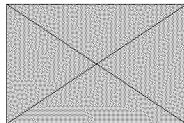
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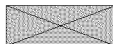
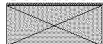
## Electric Car Sales Growth, Tesla On TV, Landfill- Powered Toyota Plant: Today's Car News

Apr 02, 2014 03:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)

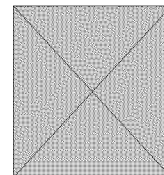
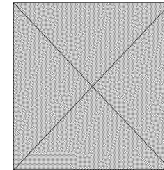


Today on Green Car Reports: Global plug-in electric car sales pass 400,000, the Tesla Model S electric car appears on 60 Minutes, and Toyota uses landfill power to cut emissions at one of its plants. All this and more on Green Car Reports. We've updated our plug-in electric car sales report for March with the latest information. The Tesla Model S...

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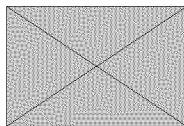


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## Plug-In Electric Car Sales Cross 400,000 Globally In Three Years

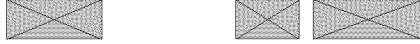
Apr 02, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



In global terms, plug-in car sales are still a drop in the ocean. That's to be expected—we've only had volume production models for the last three or four years. Disruptive products always take a little while to get going. But global plug-in electric car sales have now topped

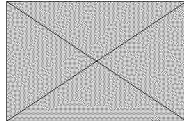
400,000 units—a figure expected to rise into the millions by 2016, if...

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## **2015 Audi A3: Small Luxury Sedan With TDI Diesel Option**

Apr 02, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



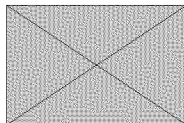
A decade ago, the concept of a sporting or luxurious sedan with a diesel engine was virtually unthinkable in the U.S. They had neither the refinement, nor the performance to be a viable alternative to a larger, multi-cylinder gasoline engine. All that is changing. And one of the ones helping to change it is the 2015 Audi A3 Sedan, available with...

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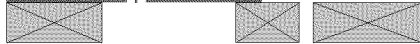
## **New Range-Extended Electric London Cab A 'Masterpiece,' Says Mayor After Test Drive**

Apr 02, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



London has some of the worst inner-city pollution of any city in Europe, but legislators and automakers are now working hard to correct that. Among them is Metrocab, a company that purpose-builds taxis for the city—and its latest product, a range-extended electric cab, is drawing praise from drivers and London's Mayor alike. Mayor of London Boris...

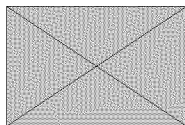
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## **Landfill Power For Toyota Plant Cuts Carbon Emissions 90 Percent**

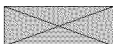
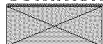
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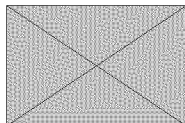
Several automakers have realized that being truly green involves much more than just building cars that don't use much fuel. The latest is Toyota, which is simultaneously powering its plant and cutting local emissions in Georgetown, Kentucky, by capturing waste gas from a local landfill site. Landfill generates large quantities of waste gas, much...

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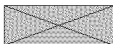
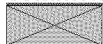
## Memo To TV News Shows: Tesla Electric Cars Don't Make Engine Noises

Apr 02, 2014 11:00 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



If you watched 60 Minutes on Sunday night--perhaps wondering whether the show would target the Tesla Model S electric car--you may have been relieved. The segment, "Fast Cars and Rocket Ships," was nothing less than a laudatory paeon to the vision and accomplishments of Tesla Motors CEO Elon Musk. MORE: Tesla's Lithium-Ion Battery Gigafactory...

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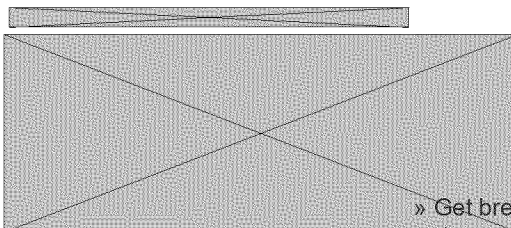
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April 2, 2014



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## TOP NEWS

### **THE GM RECALL** **Senators probing GM raise prospect of criminal wrongdoing**

UPDATED: 4/2/14 4:52 pm ET  
11:27 am U.S. ET | Apr 2

A Senate panel today raised the prospect of criminal prosecution and promised more hearings over General Motors' failure to fix a defective ignition switch, as GM CEO Mary Barra withstood a scolding from lawmakers flummoxed by a lack of answers. ... » [READ](#)

### **Energy Dept. dangles interest-free financing for suppliers**

UPDATED: 4/2/14 4:41 pm ET  
3:15 pm U.S. ET | Apr 2

The U.S. Department of Energy wants auto suppliers to know that it still has \$16 billion in interest-free financing available to support efficient-vehicle programs, and it wants them to step forward for a share of those funds. ... » [READ](#)

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## Gartner Presenting at the TLS Auto Customer Centricity Summit

**Technology Leadership Will Determine Industry's Future - Thilo Koslowski, VP & Lead Auto Analyst** will provide insights on how technology-enabled vehicles will impact the automotive customer experience, and how automotive companies have to expand their value proposition moving beyond their traditional focus, conquering new ones like e-commerce and mobility solutions. For more info visit [www.tlsummits.com](http://www.tlsummits.com).

## Tesla appeals N.J. ruling on direct-sales ban

3:05 pm U.S. ET | Apr 2

Tesla filed an appeal today in New Jersey Superior Court to overturn last month's ruling that banned the electric-vehicle maker from selling its cars directly to consumers through factory-owned stores there. ...

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## Chrysler recalls 867,795 SUVs worldwide to repair brake system

6:30 am U.S. ET | Apr 2

Chrysler Group is recalling 867,795 Jeep Grand Cherokee and Dodge Durango SUVs to install a shield to protect brake boosters from water corrosion. Vehicles from the model years 2011 through 2014 will be inspected and the boosters replaced where necessary, the automaker said in a statement today. ... [» READ](#)

## UAW, citing anti-union collusion, seeks delay in hearing on VW vote

10:01 pm U.S. ET | Apr 1

The UAW asked a federal agency to stay an April 21 hearing related to a mid-February union vote it lost at a Tennessee Volkswagen plant, citing what it called new evidence of collusion between Republican lawmakers and anti-union groups. ... [» READ](#)

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12:01 am U.S. ET | Mar 31

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Cam Clark knows he can recruit veteran service repair technicians from outside to work in his Airdrie, Alberta, Ford dealership. But he can never be sure what work habits they might bring with them. What Clark did to solve the problem has helped not only his western Canada dealership, but the youth of Airdrie. ... » [READ](#)

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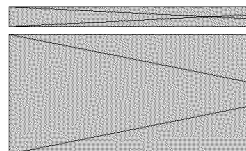
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**Ford will cut about 950 jobs in Russia as ruble, car demand weaken**

12:01 am U.S. ET | Apr 2

**Budd Co. files for bankruptcy protection to modify retiree benefits**

UPDATED: 4/1/14 8:04 pm ET - corrected

11:04 am U.S. ET | Apr 1

**Poised Barra carries GM's image on her shoulders**

6:48 pm U.S. ET | Apr 1

**AutoNation reports 6% March volume increase, best-selling Q1 since 2007**

12:02 pm U.S. ET | Apr 2

**Jesse Jackson leads minority trade mission to Japan's automakers**

7:02 am U.S. ET | Apr 2

**GM ignition recall-suit consolidation sought before Toyota judge in Calif.**

7:26 am U.S. ET | Apr 2

**Cobalt risks 'did not stand out,' NHTSA chief tells lawmakers**

UPDATED: 4/1/14 7:04 pm ET

6:48 pm U.S. ET | Apr 1

by Digital Air Strike

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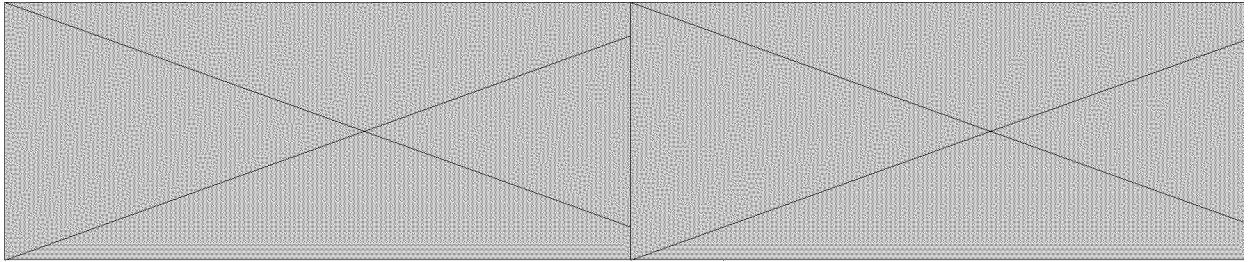
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**Sent:** Thur 4/3/2014 12:59:56 PM  
**Subject:** RE: J3066 meeting this coming Friday.

David,

Here's Patrick's email:

Buller, Patrick [patrick.buller@volvocars.com](mailto:patrick.buller@volvocars.com)

Also, I believe these names were missing from your email:

[Jenny.Sigelko@vw.com](mailto:Jenny.Sigelko@vw.com)

[nokawa@mazdausa.com](mailto:nokawa@mazdausa.com)

[mduoba@anl.gov](mailto:mduoba@anl.gov)

[Tommy\\_Chang@ahm.honda.com](mailto:Tommy_Chang@ahm.honda.com)

Jeff

**From:** Wright, DavidA [mailto:Wright.DavidA@epa.gov]  
**Sent:** Wednesday, April 02, 2014 5:42 PM  
**To:** Glodich, Jeffrey (J.M.)  
**Subject:** J3066 meeting this coming Friday.

Jeff,



I sent a note out to the individuals that you informed me are interested in participating on the J3066 Task Force. I do not have the e-mail for Patrick Buller, so, if you could send that to me, that would be appreciated. In addition, please take a quick glance at the to: list on e-mail to the interested individuals to make sure I have included everyone.

Thanks,

David A. Wright

Light-Duty Vehicle Center, Compliance Division

National Vehicle and Fuel Emissions Laboratory

Phone: (734) 214-4467

E-mail: [wright.davida@epa.gov](mailto:wright.davida@epa.gov)

**To:** Glodich, Jeffrey (J.M.) [jglodich@ford.com]  
**From:** Wright, DavidA  
**Sent:** Thur 4/3/2014 1:08:45 PM  
**Subject:** RE: J3066 meeting this coming Friday.

Thanks Jeff,

David

**From:** Glodich, Jeffrey (J.M.) [mailto:jglodich@ford.com]  
**Sent:** Thursday, April 03, 2014 9:00 AM  
**To:** Wright, DavidA  
**Subject:** RE: J3066 meeting this coming Friday.

David,

Here's Patrick's email:

Buller, Patrick [patrick.buller@volvocars.com](mailto:patrick.buller@volvocars.com)

Also, I believe these names were missing from your email:

[Jenny.Sigelko@vw.com](mailto:Jenny.Sigelko@vw.com)

[nokawa@mazdausa.com](mailto:nokawa@mazdausa.com)

[mduoba@anl.gov](mailto:mduoba@anl.gov)

[Tommy\\_Chang@ahm.honda.com](mailto:Tommy_Chang@ahm.honda.com)

Jeff

**From:** Wright, DavidA [<mailto:Wright.DavidA@epa.gov>]  
**Sent:** Wednesday, April 02, 2014 5:42 PM  
**To:** Glodich, Jeffrey (J.M.)  
**Subject:** J3066 meeting this coming Friday.

Jeff,

I sent a note out to the individuals that you informed me are interested in participating on the J3066 Task Force. I do not have the e-mail for Patrick Buller, so, if you could send that to me, that would be appreciated. In addition, please take a quick glance at the to: list on e-mail to the interested individuals to make sure I have included everyone.

Thanks,

David A. Wright

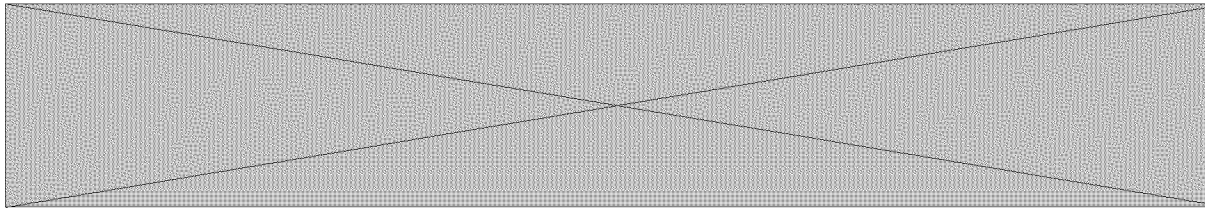
Light-Duty Vehicle Center, Compliance Division

National Vehicle and Fuel Emissions Laboratory

Phone: (734) 214-4467

E-mail: [wright.davida@epa.gov](mailto:wright.davida@epa.gov)

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** WardsAuto World magazine  
**Sent:** Thur 4/3/2014 2:03:50 PM  
**Subject:** Read March Issue Now - Big SUVs are Back!



Big SUVs are Back  
Segment is downsized, but not prices

[Click Here to Read](#)

Dear Reader,

They seemed destined for extinction in 2008, devastated by soaring gas prices and a crashing global economy, but big SUVs are mounting a comeback. [Check out our cover story now](#), and be sure to read these articles:

**NEW 2014 VERSION**  
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Light Vehicle Engines -  
North American  
Availability and  
Specifications  
presented with MAHLE

- **Critical Models Lagging for Chrysler, GM, VW**  
Chrysler Group sales jumped 10.9% in the U.S. in February on a daily-rate basis and GM outperformed expectations, but a couple of critical models continue to lag for the two Detroit automakers. [READ MORE](#)
- **Mustang Designers Never Intended to Emulate Evos Concept** - Before the all-new '15 Ford Mustang was unveiled last year, there was rampant speculation that the pony car closely would resemble the Evos concept shown at the 2011 Frankfurt auto show. [READ NOW](#)
- **My Column: Cars Tell the Truth**  
WardsAuto editors have driven close to 800 cars over 20 years of Ward's 10 Best Engines testing and written countless engine-related articles during that time. Still, some think my colleagues and I don't know how to evaluate fuel efficiency. [READ MORE](#)
- **John McElroy's Column: Why Can't UAW Sell Itself?**  
The UAW's failure to organize hourly Volkswagen employees in Chattanooga, TN is a humiliating and strategic failure. In the vote, 53% of the workers rejected the union. Clearly it no longer knows how to connect with

most working-class people. [READ MORE](#)

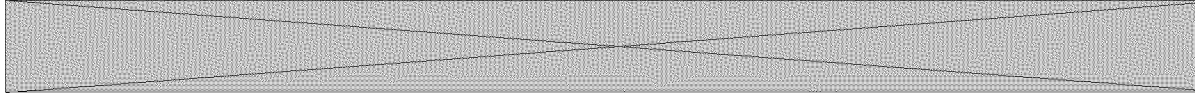
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Drew Winter  
Editor-in-Chief  
WardsAuto World



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**To:** Good, David[good.david@epa.gov]  
**From:** Henrietta.Dandy@dot.gov  
**Sent:** Thur 4/3/2014 2:29:15 PM  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

THANKS!

---

**From:** Good, David [<mailto:good.david@epa.gov>]  
**Sent:** Thursday, April 03, 2014 9:43 AM  
**To:** Dandy, Henrietta (NHTSA)  
**Subject:** Read: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Your message

**To:**  
**Subject:** Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck  
**Sent:** Thursday, April 03, 2014 9:43:33 AM (UTC-05:00) Eastern Time (US & Canada)

was read on Thursday, April 03, 2014 9:43:28 AM (UTC-05:00) Eastern Time (US & Canada).

**To:** Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]  
**Cc:** Henrietta.Dandy@dot.gov[Henrietta.Dandy@dot.gov]  
**From:** Good, David  
**Sent:** Thur 4/3/2014 2:40:15 PM  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck  
Spyker Statement no cars sold in 2011 to 2013-via 2-7-2013 email.pdf  
2012 CAFE Status.n13.xlsx

Bob,

When you get a chance, Henrietta needs the actual sales by carline for the following:

<u>Model Year</u>	<u>Mfr</u>	<u>Car or truck?</u>
2011, 2012	Hyundai	Both
2011, 2012	Kia	Both
2012	VW	Both
2012	Toyota	Pass Car

Henrietta, Spyker didn't import any vehicles into the U.S. in 2011 or 2012. See attached letter from Spyker. Also, I'll attach my spreadsheet with the status of 2012 CAFEs---in case you need it.

Dave

**From:** Henrietta.Dandy@dot.gov [mailto:Henrietta.Dandy@dot.gov]  
**Sent:** Thursday, April 03, 2014 6:34 AM  
**To:** Peavyhouse, Robert; Good, David  
**Subject:** Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Hello Robert/David,



Although NHTSA has not resolved the issue of combining VW/Porsche data for MY 2012, please forward the subject documents for VW.

Regarding Hyundai and Kia, have CAFE Letters & Calculations been generated? If so, NHTSA also requests these documents.

These requested documents will assist us to develop Thief reports that require production volumes data by these manufacturers.

Thanks,

Henrietta L. Dandy, DBA

U.S. Department of Transportation

National Highway Traffic Safety Administration

NVS-132/W43-456

1200 New Jersey Avenue, Southeast

Washington, DC 20590

TEL: (202) 366-4802

FAX: (202) 493-2990

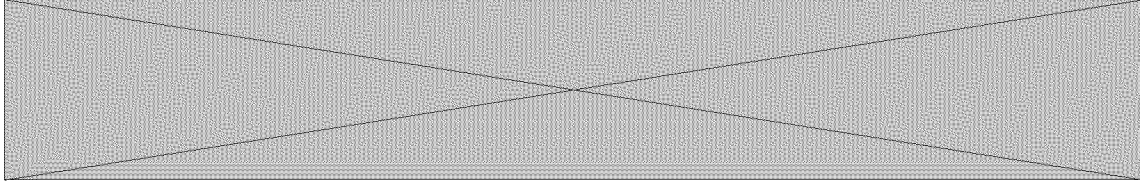
[henrietta.dandy@dot.gov](mailto:henrietta.dandy@dot.gov)

2012 CAFE Status - All Manufacturers					D. Good 11/27/2013					Percent of Production			
Mfr Name	Mfr Code	Association (on 7/1/13)	Category Code	Category	Official CAFE MPG	CAFE (Footprint) Standard	Domestic Pass Cars MIN Std	Baseline MPG (w/o AMFA credit)	EPA Letter Date	CAFE includes the following Vehicles:	Potential Penalties	represented by configuration	represented by subconfiguration
Aston Martin	70	GA	2	Import car	19.2	32.3		NA	11/20/2013		\$760,848.00		
BMW	120	Alliance	2	Import car	32.4	32.6		NA	12/6/2013	Mini, Rolls Royce	\$2,102,694.00		
	120		7	Light Truck	25.0	26.1		NA	12/6/2013		\$3,984,288.00		
BYD			2	Import car						BYD is a Chinese EV mfr; sent email reminder on			
Coda			2	Import car						Although a SMV (and in Chapter 11 Bankruptcy) may submit CAFE			
Chrysler-see Fiat	20	Alliance		Domestic car & L							included in Fiat		
Ferrari-see Fiat	220	GA	2	Import car							included in Fiat		
Fisker			2	Import car						Out of business; filed for chapter 11 bankruptcy on Oct 22, 2013 before entering CAFE/GHG data into EPA's Verify database..			
Fiat (Chrysler LLC, Ferrari, Maserati)	826		1	Domestic car	31.1	31.8	30.7	29.9	3/3/2014	Chrysler vehs only; Penalty likely will be offset by previous credits	\$20,651,977.50		
			2	Import car	19.0	30.9		NA	3/3/2014	1510 Ferraris & 2472 Maseratis only; No Alfa Romeo models sold	\$2,606,219.00		
			7	Light Truck	24.3	25.5		23.1	12/13/2013	Chrysler trucks only; Penalty likely will be offset by previous credits	\$65,669,736.00		
Ford	30	Alliance	1	Domestic car	35.7	33.2	30.7	34.5	12/13/2013	Includes Roush Mustangs (NHTSA approved in previous years); Excludes CrownVic (?) police (emergency) vehs.			
	30		2	Import car	31.3	31.7		NA	12/13/2013	Transit Connect wagons, only.			
	30		7	Light Truck	24.3	24.2		23.1	12/13/2013				
General Motors	40	Alliance	1	Domestic car	32.8	32.3	30.7	31.6	11/27/2013	Saab 9-4X 2WD & AWD models			
	40		2	Import car	NA	NA		NA					
	40		7	Light Truck	23.7	23.8		22.5	11/27/2013	Penalty will be offset by previous model year credits	\$5,033,215.00		
Honda	260	GA	1	Domestic car	38.2	33.3	30.7	NA	3/3/2014				
	260		2	Import car	36.5	33.6		NA	3/3/2014				
	260		7	Light Truck	27.7	26.4		NA	12/18/2013				
Hyundai	265	GA	2	Import car									
	265		7	Light Truck						No Hyundai Entourages--they are included in Kia CAFE			
Jaguar/Land Rover	305	Alliance	2	Import car	23.7	30.2		NA	12/6/2013		\$4,564,917.50		
	460		7	Light Truck	20.2	27.1		NA	12/6/2013		\$15,850,197.00		
Kia Motors	338	GA	2	Import car									
	338		7	Light Truck						Hyundai Entourage (made by Kia)--NHTSA OK'd for 2009			
Lotus	350		2	Import car	27.0	34.3		NA	11/21/2013		\$58,619.00		
Maserati-see Fiat	360	GA	2	Import car							included in Fiat		
Mazda	560	Alliance	1	Domestic car	NA	NA		NA	NA				
			2	Import car	37.9	33.9		NA	12/11/2013				
	560		7	Light Truck	27.8	27.2		NA	NA				
McLaren		GA	2	Import car	23.2	32.5		NA	12/11/2013		\$356,515.50		
Mercedes Benz	200	Alliance	2	Import car	29.3	32.3		28.4	12/18/2013		\$28,682,280.00		
(Daimler)	200		7	Light Truck	23.9	26.0		23.1	12/18/2013		\$9,421,681.50		
Mitsubishi	490	Alliance	2	Import car	34.1	33.6		NA	12/23/2013				
	490		7	Light Truck	31.5	28.6		NA	12/18/2013				
Nissan	380	GA	1	Domestic car	35.2	32.9	30.7	NA	12/19/2013				
	380		2	Import car	35.2	34.1		NA	12/19/2013				
	380		7	Light Truck	24.4	26.1		23.5	12/19/2013	No Suzuki Equators--they are included in Suzuki's CAFE; Penalty will be offset by previous model year credits	\$31,031,341.00		
Porsche	420	Alliance	2	Import car	27.5	33.0		NA	12/10/2013	NHTSA indicates Porche should be combined with VW for 2012MY	\$5,126,165.00		
	420		7	Light Truck	24.6	26.0		NA	12/10/2013	NHTSA indicates Porche should be combined with VW for 2012MY	\$995,379.00		
Saab	470	NA	2	Import car	NA	NA		NA	NA	Saab stopped production on 4/6/2011; GM says no 2012 Saab 9-3, 9-4, 9-5s were produced for U.S except 9-4X which is in GM's 2012 CAFE.			
Spyker	1842		2	Import car	NA	NA		NA	NA	Spyker didn't sell 2011-12 model year vehicles in U.S; ref 2/7/2013			
Subaru (Fuji)	660	GA	1	Domestic car	NA	NA		NA	NA				
	660		2	Import car	35.5	33.8		NA	12/11/2013				
	660		7	Light Truck	30.5	28.4		NA	12/11/2013				
Suzuki	540	GA	2	Import car	33.6	34.9		NA	12/12/2013	No Domestic Passenger Cars produced in the 2011 model year.	\$1,806,519.00		
	540		7	Light Truck	24.6	27		NA	12/12/2013	Equator (made by Nissan); OK'd by NHTSA in 2009 (5/2/11 email);	\$791,604.00		
Tesla*	TSL			Car**									
Toyota	570	Alliance	1	Domestic car			30.7			Toyota & Lexus RX350 models			
	570	& GA	2	Import car						Toyota, Scion, Lexus models			
	570		7	Light Truck	25.5	25.7		24.9	12/20/2013	Toyota, Lexus models	\$7,944,497.00		
Volkswagen Group	590	Alliance	1	Domestic car	33.7	32.1	30.7	NA		Passat models only			
	590		2	Import car	33.3	33.7		33.2		VW, Audi, Bentley, Bugatti, Lamborghini,	\$8,912,354.00		
	590		7	Light Truck	27.4	26.9		NA		VW, Audi;			
Volvo	600	Alliance	2	Import car	29.7	32.3		NA	12/18/2013		\$7,489,625.00		
	600		7	Light Truck	25.5	27.0		NA	12/18/2013		\$1,603,140.00		
VPG			7	Light Truck						Out of business; VPG not responding to 2013 emails, etc.			
Notes:				Total:						Total potential penalties:	\$225,443,812.00	90% Minimum	No Reqmt
										Estimated total penalties not covered by previous credits:	N/A/VALUE!	(must round to 90%)	

Ex. 4 - CBI

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Thur 4/3/2014 4:07:55 PM  
**Subject:** Green Car Report Daily Headlines

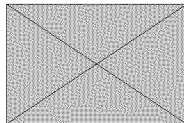
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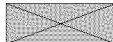
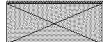
## Ford Escape Gas Mileage, 2015 Porsche 918 Spyder, VW Wireless Charging: Today's Car News

Apr 03, 2014 03:25 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)

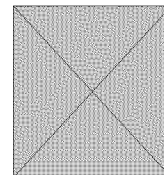
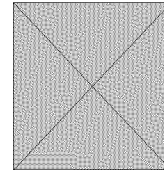


Today on Green Car Reports: The U.S. Department of Energy reboots its advanced automotive-technology loan program, the 2015 Porsche 918 Spyder takes to the track, and Volkswagen's plans for wireless electric-car charging. All this and more on Green Car Reports. We've added the last updates to our March electric-car sales report; see which plug-in...

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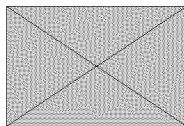


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## Gas-Mileage Average For March Vehicle Sales: 25.4 MPG, An All-Time High

Apr 03, 2014 03:19 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



As we say goodbye to March, the month has brought some good news: The average fuel economy of new vehicles rose to a new high. According to researchers at the University of Michigan Transportation Research Institute (UMTRI) the sales-weighted average

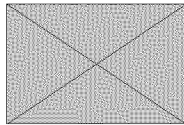
fuel economy of all new light-duty vehicles sold in the United States last month was 25.4 mpg...

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## Tesla Gigafactory Faces Skepticism From Panasonic, Analysts

Apr 03, 2014 03:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



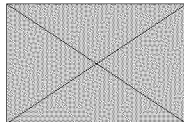
Elon Musk, CEO of startup electric-car maker Tesla Motors, is no doubt used to skepticism. Now he faces new doubts over the company's plans for a massive "gigafactory" costing as much as \$5 billion to manufacture more lithium-ion cells than any other plant in the world. **DON'T MISS:** Tesla's Lithium-Ion Battery Gigafactory: What You Need To Know...

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## 2014 Ford Escape: Great Small SUV, Not-So-Great Gas Mileage

Apr 03, 2014 02:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



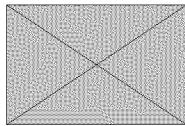
The previous model of Ford Escape was a popular car in the U.S. from 2001 through 2012—not only for its utility, but also for the availability of a hybrid model. At 32 mpg combined in front-wheel-drive form, the Escape Hybrid was comfortably one of the most economical crossovers on the market. When the all-new Escape arrived for the 2013 model...

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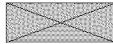
## Electric-Car Sales Surge In South Korea, Supported By Subsidies

Apr 03, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



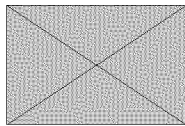
Sales of plug-in electric cars are very regional right now, globally as well as within the United States. Norway, for instance, has seen electric-car sales soar because it offers financial incentives and other benefits that aren't available to drivers of vehicles with combustion engines. Now we can add South Korea to the list of countries where...

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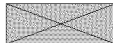
## DoE Reboots Advanced Auto-Tech Loan Program That Funded Ford, Nissan, Tesla, Fisker

Apr 03, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(John Voelcker)



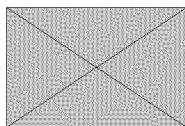
It's baaaaaaaaaaaaack. U.S. Department of Energy Secretary Ernest Moniz announced yesterday that the DoE had revised and updated its Advanced-Technology Vehicle Manufacturing (ATVM) program, which offers low-interest loans to carmakers and their suppliers. Any new loans, according to a Detroit News interview with Peter W. Davidson, executive...

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## Volkswagen Could Offer Wireless Electric Car Charging By 2017

Apr 03, 2014 12:10 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



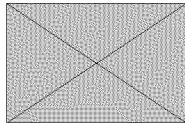
Volkswagen is on a plug-in car push right now, releasing several plug-in vehicles over the course of this year and the next. It's keen to invest in related technology too, hinting that wireless charging could be an option on its vehicles as early as 2017. Speaking to Ecomento (via Autoblog), Herbert Ruholl, Volkswagen's technical leader for...

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## 2015 Porsche 918 Spyder Plug-In Hybrid Supercar Driven

Apr 03, 2014 11:30 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



Hybrid technology is no longer the preserve of fuel-sipping family cars. In recent years, we've seen it used on SUVs and large luxury sedans too. And more recently still, the latest breed of supercars has driven down the hybrid route. One such supercar is Porsche's 918 Spyder, driven by Motor Authority. From the outside, it's instantly...

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(L.)[nyuhase@ford.com]; william.beggs@gm.com[william.beggs@gm.com];  
drm202@chrysler.com[drm202@chrysler.com]; Jenny.Sigelko@vw.com[Jenny.Sigelko@vw.com];  
nokawa@mazdausa.com[nokawa@mazdausa.com]; mduoba@anl.com[mduoba@anl.com]; Roxanne  
Loeffler[rloeffler@sae.org]  
**Cc:** Dalton, Joel[Dalton.Joel@epa.gov]; Ellies, Ben[ellies.ben@epa.gov]; Alson,  
Jeff[alson.jeff@epa.gov]; Wehrly, Linc[wehrly.linc@epa.gov]; French, Roberts[french.roberts@epa.gov]  
**From:** Wright, DavidA  
**Sent:** Thur 4/3/2014 5:32:45 PM  
**Subject:** J0366 Task Force Discussion Scope Outline  
J3066 Scope Discussion.doc

In case I run into difficulty arranging the webex for tomorrow's task force discussion I wanted to provide all of the interested task force members with an electronic copy of the outline I have drafted for our scoping discussion tomorrow.

This is my initial list of thoughts and look forward to input from the task force participants to expand upon the list and help with clarifying the scope.

Regards,

David

David A. Wright

Light-Duty Vehicle Center, Compliance Division

National Vehicle and Fuel Emissions Laboratory

Phone: (734) 214-4467

E-mail: wright.davida@epa.gov





## J3066 Scope Discussion Topics

### **Summary**

An SAE Standard, J3066, On-Board Fuel Consumption Measurement and Reporting is proposed to create a standardized method for calculating and reporting vehicle fuel consumption on a vehicle's information center. Manufacturer use of the standard would provide vehicle owners and testing organizations the option to compare the consumption between vehicles knowing the calculation methodology is consistent and without requiring any additional instrumentation.

### **Discussion Topics**

Should the standard be developed for all fuels and multi-fueled vehicles or should the standard be developed and applied to gasoline, diesel, electricity, and combinations of these three

What measurement value or values will be displayed on the information center:

- Fuel economy (MPG)

- Fuel consumption (gal/100 miles, kWh/100 miles)

- Equivalent fuel economy for alternative fuels (MPGe)

Is anyone aware of any testing performed to evaluate the accuracy of existing on-board measurement and display systems (perform fuel economy tests and reset and record the output of the vehicle display after the test, or other tests)

Should the standard include a drive energy metric – road load and inertia loading observed during vehicle operation

Should the standard include a drive quality metric – driver performance with respect to minimizing drive energy

Should the standard require the driver display correlate with the results from a standard vehicle fuel economy testing – or would this be performed as part of developing the proposed standard

**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** Giles, Michael (EEO)  
**Sent:** Thur 4/3/2014 6:17:30 PM  
**Subject:** VW - Engine information

Hello Jim,

I tried to call to clarify one point from our previous discussion regarding engines:

The Q3 (2wd) is similar vehicle as the Tiguan and uses the same existing engine:

- Same engine code CCTA (existing for some years).
- Same ETW
- Improvement is in the RLHP

The S3 carline, which we will submit as an FEDV in the next few days, is the only vehicle of the new models (Q3, S3, Golf R) using a new engine code.

I wanted to clarify this detail in case it is a basis for the confirmatory decision for the Q3.

Regards,

Mike

Michael Giles

Certification Engineer

Engineering & Environmental Office (EEO)

Volkswagen Group of America, Inc.

3800 Hamlin Road

Auburn Hills, MI 48326

Phone: 248 754 4229

Fax: 248 754 4207

mailto: [Michael.Giles@VW.com](mailto:Michael.Giles@VW.com)

**To:** Good, David[good.david@epa.gov]  
**Cc:** Henrietta.Dandy@dot.gov[Henrietta.Dandy@dot.gov]  
**From:** Peavyhouse, Robert  
**Sent:** Thur 4/3/2014 6:26:17 PM  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck  
[2012\\_Toyota.xlsx](#)  
[2012\\_Volkswagen.xlsx](#)  
[2012\\_Hyundai.xlsx](#)  
[2012\\_Kia.xlsx](#)

Henrietta,

I just used the normal query to generate these. The fuel economy values have been removed because these datasets are not official.

The query for the 2011 datasets failed, so I am going to have to do a custom query for them.

Here are all of the 2012 datasets Dave mentioned below.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Good, David  
**Sent:** Thursday, April 03, 2014 10:40 AM  
**To:** Peavyhouse, Robert  
**Cc:** Henrietta.Dandy@dot.gov  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Bob,

When you get a chance, Henrietta needs the actual sales by carline for the following:

<u>Model Year</u>	<u>Mfr</u>	<u>Car or truck?</u>
-------------------	------------	----------------------

2011, 2012	Hyundai	Both
2011, 2012	Kia	Both
2012	VW	Both
2012	Toyota	Pass Car

Henrietta, Spyker didn't import any vehicles into the U.S. in 2011 or 2012. See attached letter from Spyker. Also, I'll attach my spreadsheet with the status of 2012 CAFEs---in case you need it.

Dave

**From:** [Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov) [mailto:[Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov)]  
**Sent:** Thursday, April 03, 2014 6:34 AM  
**To:** Peavyhouse, Robert; Good, David  
**Subject:** Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Hello Robert/David,

Although NHTSA has not resolved the issue of combining VW/Porsche data for MY 2012, please forward the subject documents for VW.

Regarding Hyundai and Kia, have CAFE Letters & Calculations been generated? If so, NHTSA also requests these documents.

These requested documents will assist us to develop Thief reports that require production volumes data by these manufacturers.

Thanks,

Henrietta L. Dandy, DBA

U.S. Department of Transportation

National Highway Traffic Safety Administration

NVS-132/W43-456

1200 New Jersey Avenue, Southeast

Washington, DC 20590

TEL: (202) 366-4802

FAX: (202) 493-2990

[henrietta.dandy@dot.gov](mailto:henrietta.dandy@dot.gov)

CAFE_MOI	CAFE Mfr	CAFE Mfr (Compliance)	Compliance	CAFE_ID	Carline Mfr	Carline Mfr MODEL_TY	CALC_ID
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	1 27219
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	2 27205
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	3 27217
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	4 27199
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	5 27191
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	6 27234
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	7 27216
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	8 27207
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	9 27204
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	10 27223
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	11 27233
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	12 27206
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	13 27235
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	14 27221
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	19 27231
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	21 27193
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	22 27209
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	23 27230
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	24 27200
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	25 27215
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	26 27201
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	27 27203
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	28 27237
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	29 27222
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	30 27224
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	31 27208
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	32 27197
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	33 27236
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	35 27226
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	46 27196
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	65 27192
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	66 27194
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	67 27211
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	68 27238
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	69 27198
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	70 27228
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	71 27220
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	72 27214
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	73 27225
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	74 27210
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	75 27213
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	76 27227
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	78 27218
2012	Toyota	McTYX	PV	Passenger	916TYX	Toyota Mc	80 27229

2012Toyota McTYX	PV	Passenger	916TYX	Toyota Mc	82	27195
2012Toyota McTYX	PV	Passenger	916TYX	Toyota Mc	84	27212
2012Toyota McTYX	PV	Passenger	916TYX	Toyota Mc	85	27202
2012Toyota McTYX	PV	Passenger	916TYX	Toyota Mc	85	27202
2012Toyota McTYX	PV	Passenger	916TYX	Toyota Mc	85	27202
2012Toyota McTYX	PV	Passenger	916TYX	Toyota Mc	86	27232



MFR_DIVISION	MFR_DIVISION	CARLINE_CODE	CARLINE_CODE	CARLINE_CODE	CARLINE_CODE	ENGINE	DISPLACEMENT	UNIFORM	AIR_ASPIRATION	AIR_ASPIRATION
3	SCION	10xB	7	Small Stationary	2.362	L	NA	Naturally Aspiration		
3	SCION	10xB	7	Small Stationary	2.362	L	NA	Naturally Aspiration		
2	LEXUS	15LFA	1	Two Seater	4.805	L	NA	Naturally Aspiration		
1	TOYOTA	75YARIS	4	Compact C	1.497	L	NA	Naturally Aspiration		
1	TOYOTA	75YARIS	4	Compact C	1.497	L	NA	Naturally Aspiration		
1	TOYOTA	65PRIUS v	8	Midsize Sta	1.798	L	NA	Naturally Aspiration		
1	TOYOTA	15CAMRY	5	Midsize Ca	2.494	L	NA	Naturally Aspiration		
3	SCION	30tC	4	Compact C	2.494	L	NA	Naturally Aspiration		
3	SCION	30tC	4	Compact C	2.494	L	NA	Naturally Aspiration		
1	TOYOTA	15CAMRY	5	Midsize Ca	3.456	L	NA	Naturally Aspiration		
3	SCION	40iQ	2	Minicomp	1.329	L	NA	Naturally Aspiration		
2	LEXUS	30CT 200h	4	Compact C	1.798	L	NA	Naturally Aspiration		
3	SCION	20xD	3	Subcompa	1.798	L	NA	Naturally Aspiration		
3	SCION	20xD	3	Subcompa	1.798	L	NA	Naturally Aspiration		
2	LEXUS	150RX 450h	22	Special Pur	3.456	L	NA	Naturally Aspiration		
2	LEXUS	5HS 250h	4	Compact C	2.362	L	NA	Naturally Aspiration		
2	LEXUS	35ES 350	5	Midsize Ca	3.456	L	NA	Naturally Aspiration		
2	LEXUS	77IS 350 AW/3		Subcompa	3.456	L	NA	Naturally Aspiration		
2	LEXUS	75IS 350/IS 33		Subcompa	3.456	L	NA	Naturally Aspiration		
2	LEXUS	85IS 250 AW/3		Subcompa	2.5	L	NA	Naturally Aspiration		
2	LEXUS	80IS 250/IS 23		Subcompa	2.5	L	NA	Naturally Aspiration		
2	LEXUS	80IS 250/IS 23		Subcompa	2.5	L	NA	Naturally Aspiration		
2	LEXUS	20LS 460	5	Midsize Ca	4.608	L	NA	Naturally Aspiration		
2	LEXUS	23LS 460 AW/5		Midsize Ca	4.608	L	NA	Naturally Aspiration		
2	LEXUS	25LS 460 L	5	Midsize Ca	4.608	L	NA	Naturally Aspiration		
2	LEXUS	27LS 460 L A/5		Midsize Ca	4.608	L	NA	Naturally Aspiration		
2	LEXUS	87IS F	3	Subcompa	4.969	L	NA	Naturally Aspiration		
2	LEXUS	10LS 600h L	5	Midsize Ca	4.969	L	NA	Naturally Aspiration		
2	LEXUS	140RX 350	22	Special Pur	3.456	L	NA	Naturally Aspiration		
1	TOYOTA	190FJ CRUISER	22	Special Pur	3.956	L	NA	Naturally Aspiration		
1	TOYOTA	60PRIUS	5	Midsize Ca	1.798	L	NA	Naturally Aspiration		
1	TOYOTA	10CAMRY HY5		Midsize Ca	2.494	L	NA	Naturally Aspiration		
1	TOYOTA	12CAMRY HY5		Midsize Ca	2.494	L	NA	Naturally Aspiration		
1	TOYOTA	5COROLLA	4	Compact C	1.798	L	NA	Naturally Aspiration		
1	TOYOTA	5COROLLA	4	Compact C	1.798	L	NA	Naturally Aspiration		
1	TOYOTA	80COROLLA	17	Small Stati	1.798	L	NA	Naturally Aspiration		
1	TOYOTA	80COROLLA	17	Small Stati	1.798	L	NA	Naturally Aspiration		
1	TOYOTA	80COROLLA	17	Small Stati	2.362	L	NA	Naturally Aspiration		
1	TOYOTA	80COROLLA	17	Small Stati	2.362	L	NA	Naturally Aspiration		
1	TOYOTA	80COROLLA	17	Small Stati	2.362	L	NA	Naturally Aspiration		
1	TOYOTA	20AVALON	6	Large Cars	3.456	L	NA	Naturally Aspiration		
1	TOYOTA	160RAV4 2WD	22	Special Pur	2.494	L	NA	Naturally Aspiration		
1	TOYOTA	160RAV4 2WD	22	Special Pur	3.456	L	NA	Naturally Aspiration		
1	TOYOTA	200VENZA	22	Special Pur	2.672	L	NA	Naturally Aspiration		

1TOYOTA	200VENZA	22	Special Pur	3.456L	NA	Naturally A
1TOYOTA	62PRIUS c	4	Compact C	1.497L	NA	Naturally A
1TOYOTA	67PRIUS Plug5		Midsized Ca	1.798L	NA	Naturally A
1TOYOTA	67PRIUS Plug5		Midsized Ca	1.798L	NA	Naturally A
1TOYOTA	67PRIUS Plug5		Midsized Ca	1.798L	NA	Naturally A
1TOYOTA	310RAV4 EV	22	Special Pur	L		

METHUEN	FUEL_USA	FE_UNIT	TRANS_IN	TRANS_TY	TRANS_TY	TRANS_TY	TOTAL_NU	TRANS_LO	TRANS_CR
☼	Gasoline (FMPG		Manual(M M		Manual		5N	N	
☼	Gasoline (FMPG		Auto(S4) SA		Semi-Automatic		4Y	N	
☼PR	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼	Gasoline (FMPG		Auto(A4) A		Automatic		4Y	N	
☼	Gasoline (FMPG		Manual(M M		Manual		5N	N	
☼	Gasoline (FMPG		Auto(AV) CVT		Continuously Variable		1N	N	
☼	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼	Gasoline (FMPG		Manual(M M		Manual		6N	N	
☼	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼	Gasoline (FMPG		Auto(AV) CVT		Continuously Variable		1Y	N	
☼	Gasoline (FMPG		Auto(AV) CVT		Continuously Variable		1N	N	
☼	Gasoline (FMPG		Auto(A4) A		Automatic		4Y	N	
☼	Gasoline (FMPG		Manual(M M		Manual		5N	N	
☼PR	Gasoline (FMPG		Auto(AV-S)SCV		Selectable Continuously Variable		6N	N	
☼	Gasoline (FMPG		Auto(AV) CVT		Continuously Variable		1N	N	
☼	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼PR	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼PR	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼PR	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼PR	Gasoline (FMPG		Manual(M M		Manual		6N	N	
☼PR	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼PR	Gasoline (FMPG		Auto(S8) SA		Semi-Automatic		8Y	N	
☼PR	Gasoline (FMPG		Auto(S8) SA		Semi-Automatic		8Y	N	
☼PR	Gasoline (FMPG		Auto(S8) SA		Semi-Automatic		8Y	N	
☼PR	Gasoline (FMPG		Auto(S8) SA		Semi-Automatic		8Y	N	
☼PR	Gasoline (FMPG		Auto(S8) SA		Semi-Automatic		8Y	N	
☼PR	Gasoline (FMPG		Auto(S8) SA		Semi-Automatic		8Y	N	
☼PR	Gasoline (FMPG		Auto(AV-S)SCV		Selectable Continuously Variable		6N	N	
☼	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼	Gasoline (FMPG		Auto(A5) A		Automatic		5Y	N	
☼	Gasoline (FMPG		Auto(AV) CVT		Continuously Variable		1N	N	
☼	Gasoline (FMPG		Auto(AV) CVT		Continuously Variable		1N	N	
☼	Gasoline (FMPG		Auto(AV) CVT		Continuously Variable		1N	N	
☼	Gasoline (FMPG		Auto(A4) A		Automatic		4Y	N	
☼	Gasoline (FMPG		Manual(M M		Manual		5N	N	
☼	Gasoline (FMPG		Auto(A4) A		Automatic		4Y	N	
☼	Gasoline (FMPG		Manual(M M		Manual		5N	N	
☼	Gasoline (FMPG		Auto(A4) A		Automatic		4Y	N	
☼	Gasoline (FMPG		Manual(M M		Manual		5N	N	
☼	Gasoline (FMPG		Auto(S5) SA		Semi-Automatic		5Y	N	
☼	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	
☼	Gasoline (FMPG		Auto(A4) A		Automatic		4Y	N	
☼	Gasoline (FMPG		Auto(A5) A		Automatic		5Y	N	
☼	Gasoline (FMPG		Auto(S6) SA		Semi-Automatic		6Y	N	

Ⓔ	Gasoline (fMPG	Auto(S6)	SA	Semi-Automatic	6Y	N
Ⓔ	Gasoline (fMPG	Auto(AV)	CVT	Continuously Variable	1N	N
Ⓔ	Gasoline (fMPG	Auto(AV)	CVT	Continuously Variable	1N	N
ⒺL	Electricity MPG	Auto(AV)	CVT	Continuously Variable	1N	N
ⒺL	Electricity MPG	Auto(AV)	CVT	Continuously Variable	1N	N
EL	Electricity MPG	Auto(AV)	CVT	Continuously Variable	1N	N

GRADE	DRIVE_SYS	Stop-Start	Stop-Start	MODEL_TY	Model_Ty	CAFE Dom	EPA CAFE	IEPA CAFE	IEPA CAFE	IEPA CAFE
F	2-Wheel DN	No			2488I	Y				
F	2-Wheel DN	No			29350I	Y				
R	2-Wheel DN	No			177I	Y				
F	2-Wheel DN	No			52400I	Y				
F	2-Wheel DN	No			2486I	Y				
F	2-Wheel DN	No			50087I	Y				
F	2-Wheel DN	No			428023D	Y				
F	2-Wheel DN	No			4137I	Y				
F	2-Wheel DN	No			17051I	Y				
F	2-Wheel DN	No			39644D	Y				
F	2-Wheel DN	No			9744I	Y				
F	2-Wheel DN	No	HYBRID		21668I	Y				
F	2-Wheel DN	No			11799I	Y				
F	2-Wheel DN	No			1085I	Y				
F	2-Wheel DN	No	HYBRID		2006I	Y				
F	2-Wheel DN	No	HYBRID		503I	Y				
F	2-Wheel DN	No			32739I	Y				
A	All Wheel IN	No			760I	Y				
R	2-Wheel DN	No			3145I	Y				
A	All Wheel IN	No			7313I	Y				
R	2-Wheel DN	No			42I	Y				
R	2-Wheel DN	No			19877I	Y				
R	2-Wheel DN	No			3842I	Y				
A	All Wheel IN	No			2649I	Y				
R	2-Wheel DN	No			962I	Y				
A	All Wheel IN	No			587I	Y				
R	2-Wheel DN	No			588I	Y				
A	All Wheel IN	No	HYBRID		62I	Y				
F	2-Wheel DN	No			24748D	Y				
R	2-Wheel DN	No			1018I	Y				
F	2-Wheel DN	No	HYBRID		125415I	Y				
F	2-Wheel DN	No	HYBRID		16626I	Y				
F	2-Wheel DN	No	HYBRID		39553I	Y				
F	2-Wheel DN	No			190267D	Y				
F	2-Wheel DN	No			4658D	Y				
F	2-Wheel DN	No			1669D	Y				
F	2-Wheel DN	No			75D	Y				
A	All Wheel IN	No			744D	Y				
F	2-Wheel DN	No			15D	Y				
F	2-Wheel DN	No			545D	Y				
F	2-Wheel DN	No			20938D	Y				
F	2-Wheel DN	No			48866I	Y				
F	2-Wheel DN	No			5265I	Y				
F	2-Wheel DN	No			7313D	Y				

F	2-Wheel DN	No		5535D	Y
F	2-Wheel DN	No	HYBRID	45069I	Y
F	2-Wheel DN	No	PHEV	I	Y
F	2-Wheel DN	No	PHEV	I	N
F	2-Wheel DN	No	PHEV	I	N
F	2-Wheel DN	No		452I	Y

Final Calc -Final Calc -Final Calc -ENG\_BLOCENG\_BLOCNUM\_CYLIENG\_TYPE ENG\_TYPE

I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	104SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign

V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign



Engine Type	AIR_INJECT	AIR_INJECT	ENG_RATE	CHARGE_A	CHARGER_EGR_YN	COOLED_EGR_TYPE	EGR_TYPE
ition	NA	Not Applic	158N	N/A	N	N	
ition	NA	Not Applic	158N	N/A	N	N	
ition	AIR	Secondary	553		N	N	
ition	NA	Not Applic	106		N	N	
ition	NA	Not Applic	106		N	N	
ition	NA	Not Applic	98N	N/A	Y	Y	EEGR Electronic/Electric
ition	NA	Not Applic	178N	N/A	N	N	
ition	NA	Not Applic	180N	N/A	N	N	
ition	NA	Not Applic	180N	N/A	N	N	
ition	NA	Not Applic	268N	N/A	N	N	
ition	NA	Not Applic	94		N	N	
ition	NA	Not Applic	98N	N/A	Y	Y	EEGR Electronic/Electric
ition	NA	Not Applic	128		N	N	
ition	NA	Not Applic	128		N	N	
ition	NA	Not Applic	245N	N/A	Y	Y	EEGR Electronic/Electric
ition	NA	Not Applic	147N	N/A	N	N	
ition	NA	Not Applic	268N	N/A	N	N	
ition	NA	Not Applic	306N	N/A	N	N	
ition	NA	Not Applic	306N	N/A	N	N	
ition	NA	Not Applic	204		N	N	
ition	NA	Not Applic	204		N	N	
ition	NA	Not Applic	204		N	N	
ition	NA	Not Applic	380		N	N	
ition	NA	Not Applic	380		N	N	
ition	NA	Not Applic	380		N	N	
ition	NA	Not Applic	380		N	N	
ition	NA	Not Applic	416		N	N	
ition	NA	Not Applic	389		N	N	
ition	NA	Not Applic	270N	N/A	N	N	
ition	NA	Not Applic	260		N	N	
ition	NA	Not Applic	98N	N/A	Y	Y	EEGR Electronic/Electric
ition	NA	Not Applic	154N	N/A	Y	Y	EEGR Electronic/Electric
ition	NA	Not Applic	154N	N/A	Y	Y	EEGR Electronic/Electric
ition	NA	Not Applic	132		N	N	
ition	NA	Not Applic	132		N	N	
ition	NA	Not Applic	132		N	N	
ition	NA	Not Applic	132		N	N	
ition	NA	Not Applic	158N	N/A	N	N	
ition	NA	Not Applic	158N	N/A	N	N	
ition	NA	Not Applic	158N	N/A	N	N	
ition	NA	Not Applic	268N	N/A	N	N	
ition	NA	Not Applic	180N	N/A	N	N	
ition	NA	Not Applic	269N	N/A	N	N	
ition	NA	Not Applic	182N	N/A	N	N	

ition	NA	Not Applic	270N	N/A	N	N		
ition	NA	Not Applic	72N	N/A	Y	Y	EEGR	Electronic/Electric
ition	NA	Not Applic	98N	N/A	Y	Y	EEGR	Electronic/Electric
ition	NA	Not Applic	98N	N/A	Y	Y	EEGR	Electronic/Electric
ition	NA	Not Applic	98N	N/A	Y	Y	EEGR	Electronic/Electric

2017-FFP\_009634

N					N	2	2
Y	EM	IC Engine/IN	N	Y	N	2	2
Y	EM	IC Engine/IY	N	Y	N	2	2
Y	EM	IC Engine/IY	N	Y	N	2	2
Y	EM	IC Engine/IY	N	Y	N	2	2
N		Y	N	Y			



4Y	Intake and	N	N	0W-20	C	Combustio
4Y	Intake	N	N	0W-20	C	Combustio
4Y	Intake	N	N	0W-20	C	Combustio
4Y	Intake	N	N	0W-20	C	Combustio
4Y	Intake	N	N	0W-20	E	Electric Motor
0					E	Electric Motor

# BASIC\_FUEBASIC\_FUEMfr Model Type Comments

MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	MultipointREVISION: FUEL COST (2011/08/21, 2011/08/30)
MFI	MultipointREVISION: FUEL COST (2011/08/21, 2011/08/30)
MFI	MultipointREVISION: FE LABEL INFORMATION AND BASE LEVEL INFORMATION(2011/06/29), FUEL COST
MFI	MultipointREVISION: FE LABEL INFORMATION AND BASE LEVEL INFORMATION(2011/06/29), FUEL COST
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	Multipoint/sequential fuel injection
SDPI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDPI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDPI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDPI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDPI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDPI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDPI	Spark IgnitREVISION: FUEL COST (2011/08/21)
SDPI	Spark Ignition direct & ported injection
MFI	MultipointREVISION: FUEL COST (2011/08/21)
MFI	Multipoint/sequential fuel injection
MFI	MultipointREVISION: RELEASE DATE(2011/09/07)
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
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MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection
MFI	Multipoint/sequential fuel injection

MFI Multipoint/sequential fuel injection  
MFI Multipoint/sequential fuel injection  
MFI Multipoint Charge time 1.5 hrs at 240v; FE Label kW-hr/100 values = 26 city, 33 hwy, 29 combined. Com  
MFI Multipoint Charge time 1.5 hrs at 240v; FE Label kW-hr/100 values = 26 city, 33 hwy, 29 combined. Com  
Charge time 1.5 hrs at 240v; FE Label kW-hr/100 values = 26 city, 33 hwy, 29 combined. Com  
ADJUSTED ROUNDED DRIVING RANGE = 107 CITY, 99 HWY



(2011/08/21)

(2011/08/21)

posite MPGe values = 59 city, 56 hwy, 58 combined. Save \$7,600 in fuel costs over 5 years.  
posite MPGe values = 59 city, 56 hwy, 58 combined. Save \$7,600 in fuel costs over 5 years.  
posite MPGe values = 59 city, 56 hwy, 58 combined. Save \$7,600 in fuel costs over 5 years.

CAFE_MOI	CAFE Mfr	CAFE Mfr (Compliance)	CAFE ID	Carline Mf	Carline Mf (Model)	CALC_ID		
2012	Volkswagen	VWX	LT	Light Truck	688 ADX	Audi	35	20048
2012	Volkswagen	VWX	LT	Light Truck	688 ADX	Audi	36	20052
2012	Volkswagen	VWX	LT	Light Truck	688 ADX	Audi	47	20049
2012	Volkswagen	VWX	LT	Light Truck	688 ADX	Audi	72	20054
2012	Volkswagen	VWX	LT	Light Truck	688 ADX	Audi	77	20051
2012	Volkswagen	VWX	LT	Light Truck	688 ADX	Audi	82	20050
2012	Volkswagen	VWX	LT	Light Truck	688 VWX	Volkswage	59	20047
2012	Volkswagen	VWX	LT	Light Truck	688 VWX	Volkswage	81	20053
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	3	20097
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	4	20121
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	9	20102
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	10	20112
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	11	20088
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	20	20119
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	21	20131
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	29	20106
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	30	20126
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	31	20128
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	32	20120
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	33	20107
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	34	20105
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	37	20114
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	38	20072
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	39	20133
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	40	20062
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	41	20055
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	42	20076
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	43	20124
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	44	20108
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	46	20066
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	56	20123
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	57	20091
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	60	20075
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	61	20103
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	62	20077
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	63	20085
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	64	20095
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	66	20065
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	67	20098
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	68	20090
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	69	20089
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	70	20116
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	71	20093
2012	Volkswagen	VWX	PV	Passenger	689 ADX	Audi	73	20134

2012VolkswageVWX	PV	Passenger	689ADX	Audi	74	20109
2012VolkswageVWX	PV	Passenger	689ADX	Audi	75	20069
2012VolkswageVWX	PV	Passenger	689ADX	Audi	80	20070
2012VolkswageVWX	PV	Passenger	689ADX	Audi	83	20118
2012VolkswageVWX	PV	Passenger	689ADX	Audi	84	20086
2012VolkswageVWX	PV	Passenger	689ADX	Audi	86	20057
2012VolkswageVWX	PV	Passenger	689ADX	Audi	89	20068
2012VolkswageVWX	PV	Passenger	689ADX	Audi	165	20092
2012VolkswageVWX	PV	Passenger	689NLX	Automobil	7	20117
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	8	20130
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	12	20074
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	12	20074
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	13	20067
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	13	20067
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	14	20080
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	14	20080
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	88	20129
2012VolkswageVWX	PV	Passenger	689BEX	Bentley M	88	20129
2012VolkswageVWX	PV	Passenger	689BGT	Bugatti Au	85	20079
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	1	20059
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	2	20064
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	5	20111
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	16	20110
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	17	20078
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	18	20122
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	19	20056
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	22	20099
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	23	20096
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	24	20113
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	25	20083
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	26	20084
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	27	20132
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	28	20060
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	45	20100
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	48	20058
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	49	20087
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	50	20101
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	51	20063
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	52	20071
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	53	20104
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	54	20073
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	55	20081
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	58	20127
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	76	20135
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	78	20094

2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	79	20082
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	87	20061
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	90	20115
2012VolkswageVWX	PV	Passenger	689VWX	Volkswage	91	20125

MFR_DIV1	MFR_DIV2	CARLINE_C	CARLINE_M	CARLINE_C	ENG_DISP	DISPL_UNI	AIR_ASPIR	AIR_ASPIR
1 Audi	330 Q5	23	Special Pur	1.984 L	TC	Turbochar		
1 Audi	330 Q5	23	Special Pur	3.197 L	NA	Naturally A		
2 Volkswage	140 TOUAREG	23	Special Pur	2.967 L	TC	Turbochar		
1 Audi	320 Q7	23	Special Pur	2.967 L	TC	Turbochar		
1 Audi	320 Q7	23	Special Pur	2.995 L	SC	Superchar		
2 Volkswage	165 TIGUAN 4M	23	Special Pur	1.984 L	TC	Turbochar		
1 Volkswage	145 Touareg H	23	Special Pur	2.995 L	SC	Superchar		
1 Volkswage	140 TOUAREG	23	Special Pur	3.596 L	NA	Naturally A		
2 Volkswage	293 CC	4	Compact C	1.984 L	TC	Turbochar		
2 Volkswage	293 CC	4	Compact C	1.984 L	TC	Turbochar		
1 Audi	80 A6	5	Midsize Ca	1.984 L	TC	Turbochar		
1 Audi	70 A7 quattro	5	Midsize Ca	2.995 L	SC	Superchar		
1 Audi	75 A6 quattro	5	Midsize Ca	2.995 L	SC	Superchar		
1 Audi	10 A4	4	Compact C	1.984 L	TC	Turbochar		
1 Audi	51 A5 Cabrio	3	Subcompa	1.984 L	TC	Turbochar		
1 Audi	20 A4 QUATT	4	Compact C	1.984 L	TC	Turbochar		
1 Audi	40 A5 QUATT	3	Subcompa	1.984 L	TC	Turbochar		
1 Audi	25 A4 AVANT	7	Small Stati	1.984 L	TC	Turbochar		
1 Audi	53 A5 Cabrio	3	Subcompa	1.984 L	TC	Turbochar		
1 Audi	20 A4 QUATT	4	Compact C	1.984 L	TC	Turbochar		
1 Audi	40 A5 QUATT	3	Subcompa	1.984 L	TC	Turbochar		
1 Audi	30 S4	4	Compact C	2.995 L	SC	Superchar		
1 Audi	56 S5 Cabrio	3	Subcompa	2.995 L	SC	Superchar		
1 Audi	30 S4	4	Compact C	2.995 L	SC	Superchar		
1 Audi	92 R8 Spyder	1	Two Seate	5.204 L	NA	Naturally A		
1 Audi	90 R8	1	Two Seate	5.204 L	NA	Naturally A		
1 Audi	92 R8 Spyder	1	Two Seate	5.204 L	NA	Naturally A		
1 Audi	90 R8	1	Two Seate	5.204 L	NA	Naturally A		
2 Volkswage	211 GTI	4	Compact C	1.984 L	TC	Turbochar		
2 Volkswage	211 GTI	4	Compact C	1.984 L	TC	Turbochar		
1 Audi	42 S5	3	Subcompa	4.163 L	NA	Naturally A		
1 Audi	42 S5	3	Subcompa	4.163 L	NA	Naturally A		
1 Audi	96 A8 L	6	Large Cars	4.163 L	NA	Naturally A		
1 Audi	95 A8	5	Midsize Ca	4.163 L	NA	Naturally A		
3 Lamborghini	406 Gallardo C	1	Two Seate	5.204 L	NA	Naturally A		
3 Lamborghini	426 Gallardo S	1	Two Seate	5.204 L	NA	Naturally A		
3 Lamborghini	406 Gallardo C	1	Two Seate	5.204 L	NA	Naturally A		
1 Audi	92 R8 Spyder	1	Two Seate	4.163 L	NA	Naturally A		
1 Audi	65 A3	7	Small Stati	1.984 L	TC	Turbochar		
1 Audi	65 A3	7	Small Stati	1.984 L	TC	Turbochar		
1 Audi	66 A3 QUATT	7	Small Stati	1.984 L	TC	Turbochar		
1 Audi	37 TT COUPE	3	Subcompa	1.984 L	TC	Turbochar		
1 Audi	38 TT ROADS	1	Two Seate	1.984 L	TC	Turbochar		
1 Audi	90 R8	1	Two Seate	4.163 L	NA	Naturally A		

1 Audi	92 R8 Spyder	1	Two Seater	4.163 L	NA	Naturally Aspirated
1 Audi	90 R8	1	Two Seater	4.163 L	NA	Naturally Aspirated
1 Audi	61 TTRS COUPÉ	3	Subcompact	2.48 L	TC	Turbocharged
2 Volkswagen	160 TIGUAN	22	Special Purpose	1.984 L	TC	Turbocharged
2 Volkswagen	160 TIGUAN	22	Special Purpose	1.984 L	TC	Turbocharged
2 Volkswagen	230 BEETLE	3	Subcompact	1.984 L	TC	Turbocharged
2 Volkswagen	212 Golf R	4	Compact Car	1.984 L	TC	Turbocharged
3 Lamborghini	426 Gallardo S	1	Two Seater	5.204 L	NA	Naturally Aspirated
1 Lamborghini	475 Aventador	1	Two Seater	6.498 L	NA	Naturally Aspirated
1 Bentley Motors	15 Mulsanne	5	Midsize Car	6.8 L	TC	Turbocharged
1 Bentley Motors	40 Continental	5	Midsize Car	5.998 L	TC	Turbocharged
1 Bentley Motors	40 Continental	5	Midsize Car	5.998 L	TC	Turbocharged
1 Bentley Motors	55 Continental	3	Subcompact	5.998 L	TC	Turbocharged
1 Bentley Motors	55 Continental	3	Subcompact	5.998 L	TC	Turbocharged
1 Bentley Motors	35 Continental	4	Compact Car	5.998 L	TC	Turbocharged
1 Bentley Motors	35 Continental	4	Compact Car	5.998 L	TC	Turbocharged
1 Bentley Motors	45 Continental	3	Subcompact	5.998 L	TC	Turbocharged
1 Bentley Motors	45 Continental	3	Subcompact	5.998 L	TC	Turbocharged
1 Bugatti	500 Veyron	1	Two Seater	7.997 L	TC	Turbocharged
1 Volkswagen	280 Passat	5	Midsize Car	2.48 L	NA	Naturally Aspirated
1 Volkswagen	280 Passat	5	Midsize Car	2.48 L	NA	Naturally Aspirated
1 Volkswagen	216 EOS	3	Subcompact	1.984 L	TC	Turbocharged
2 Audi	96 A8L	6	Large Cars	6.3 L	NA	Naturally Aspirated
1 Volkswagen	221 Jetta	4	Compact Car	1.984 L	TC	Turbocharged
1 Volkswagen	221 Jetta	4	Compact Car	1.984 L	TC	Turbocharged
1 Volkswagen	280 Passat	5	Midsize Car	3.596 L	NA	Naturally Aspirated
1 Volkswagen	225 JETTA SPO	7	Small Station Wagon	2.48 L	NA	Naturally Aspirated
1 Volkswagen	221 Jetta	4	Compact Car	2.48 L	NA	Naturally Aspirated
1 Volkswagen	206 GOLF	4	Compact Car	2.48 L	NA	Naturally Aspirated
1 Volkswagen	230 BEETLE	3	Subcompact	2.48 L	NA	Naturally Aspirated
1 Volkswagen	225 JETTA SPO	7	Small Station Wagon	2.48 L	NA	Naturally Aspirated
1 Volkswagen	221 Jetta	4	Compact Car	2.48 L	NA	Naturally Aspirated
1 Volkswagen	206 GOLF	4	Compact Car	2.48 L	NA	Naturally Aspirated
1 Volkswagen	230 BEETLE	3	Subcompact	1.984 L	TC	Turbocharged
1 Volkswagen	280 Passat	5	Midsize Car	1.968 L	TC	Turbocharged
1 Volkswagen	225 JETTA SPO	7	Small Station Wagon	1.968 L	TC	Turbocharged
1 Volkswagen	221 Jetta	4	Compact Car	1.968 L	TC	Turbocharged
1 Volkswagen	206 GOLF	4	Compact Car	1.968 L	TC	Turbocharged
2 Audi	65 A3	7	Small Station Wagon	1.968 L	TC	Turbocharged
1 Volkswagen	225 JETTA SPO	7	Small Station Wagon	1.968 L	TC	Turbocharged
1 Volkswagen	221 Jetta	4	Compact Car	1.968 L	TC	Turbocharged
1 Volkswagen	206 GOLF	4	Compact Car	1.968 L	TC	Turbocharged
1 Volkswagen	298 CC 4MOTION	4	Compact Car	3.596 L	NA	Naturally Aspirated
1 Volkswagen	280 Passat	5	Midsize Car	1.968 L	TC	Turbocharged
1 Volkswagen	221 Jetta	4	Compact Car	1.984 L	NA	Naturally Aspirated

1Volkswage	221 Jetta	4	Compact C	1.984 L	NA	Naturally A
1Volkswage	230 BEETLE	3	Subcompa	2.48 L	NA	Naturally A
1Volkswage	235 BEETLE CO3		Subcompa	2.48 L	NA	Naturally A
1Volkswage	235 BEETLE CO3		Subcompa	1.984 L	TC	Turbochari



METH	FUEL	USE	UNIT	TRANS_IN	TRANS_TY	TRANS_TY	TRANS_TY	TOTAL_NU	TRANS_LO	TRANS_CR
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S6)	SA	Semi-Automatic				6Y	N	
DU	Diesel, ultr	Auto(S8)	SA	Semi-Automatic				8Y	N	
DU	Diesel, ultr	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S6)	SA	Semi-Automatic				6Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S6)	SA	Semi-Automatic				6N	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Auto(AV)	CVT	Continuously Variable				1N	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(AV)	CVT	Continuously Variable				1N	N	
GP	Gasoline (FMPG	Auto(AV)	CVT	Continuously Variable				1N	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Auto(S7)	SA	Semi-Automatic				7Y	N	
GP	Gasoline (FMPG	Auto(S7)	SA	Semi-Automatic				7Y	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Auto(AM6	AM	Automated Manual				6Y	N	
GP	Gasoline (FMPG	Auto(AM6	AM	Automated Manual				6Y	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Auto(S6)	SA	Semi-Automatic				6Y	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Auto(S6)	SA	Semi-Automatic				6Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(S8)	SA	Semi-Automatic				8Y	N	
GP	Gasoline (FMPG	Auto(AM6	AM	Automated Manual				6Y	N	
GP	Gasoline (FMPG	Auto(AM6	AM	Automated Manual				6Y	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Auto(AM-S	AMS	Automated Manual- Selectable				6Y	N	
GP	Gasoline (FMPG	Manual(M	M	Manual				6N	N	
GP	Gasoline (FMPG	Auto(AM-S	AMS	Automated Manual- Selectable				6Y	N	
GP	Gasoline (FMPG	Auto(S6)	SA	Semi-Automatic				6Y	N	
GP	Gasoline (FMPG	Auto(S6)	SA	Semi-Automatic				6Y	N	
GP	Gasoline (FMPG	Auto(S6)	SA	Semi-Automatic				6Y	N	
GP	Gasoline (FMPG	Auto(AM-S	AMS	Automated Manual- Selectable				6Y	N	

GP	Gasoline (FMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Auto(S7) SA	Semi-Automatic	7N	N
GP	Gasoline (FMPG	Auto(S8) SA	Semi-Automatic	8Y	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
E	Ethanol (EiMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
E	Ethanol (EiMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
E	Ethanol (EiMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
E	Ethanol (EiMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GPR	Gasoline (FMPG	Auto(S7) SA	Semi-Automatic	7N	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Manual(M M	Manual	5N	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6N	N
GP	Gasoline (FMPG	Auto(S8) SA	Semi-Automatic	8Y	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6N	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Manual(M M	Manual	5N	N
GP	Gasoline (FMPG	Manual(M M	Manual	5N	N
GP	Gasoline (FMPG	Manual(M M	Manual	5N	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6N	N
DU	Diesel, ultrMPG	Manual(M M	Manual	6N	N
DU	Diesel, ultrMPG	Auto(S6) SA	Semi-Automatic	6Y	N
DU	Diesel, ultrMPG	Auto(S6) SA	Semi-Automatic	6Y	N
DU	Diesel, ultrMPG	Auto(S6) SA	Semi-Automatic	6Y	N
DU	Diesel, ultrMPG	Auto(S6) SA	Semi-Automatic	6Y	N
DU	Diesel, ultrMPG	Manual(M M	Manual	6N	N
DU	Diesel, ultrMPG	Manual(M M	Manual	6N	N
DU	Diesel, ultrMPG	Manual(M M	Manual	6N	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
DU	Diesel, ultrMPG	Auto(S6) SA	Semi-Automatic	6N	N
GP	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N

Q	Gasoline (FMPG	Manual(M M	Manual	5N	N
Q	Gasoline (FMPG	Manual(M M	Manual	5N	N
Q	Gasoline (FMPG	Auto(S6) SA	Semi-Automatic	6Y	N
GP	Gasoline (FMPG	Auto(AM-AMS	Automated Manual- Selectable	6Y	N

DRIVE_TYP	DRIVE_SYS	Stop-Start	Stop-Start	MODEL_TY	Model_Ty	CAFE Dom	EPA CAFE	IEPA CAFE	IEPA CAFE	IEPA CAFE
A	All Wheel IN	No			215061	Y				
A	All Wheel IN	No			123741	Y				
A	All Wheel IN	No			55281	Y				
A	All Wheel IN	No	Audi Q7 TL		34161	Y				
A	All Wheel IN	No	Audi Q7		55351	Y				
A	All Wheel IN	No	Tiguan 4M		116001	Y				
A	All Wheel IN	No	Touareg H		3051	Y				
A	All Wheel IN	No	Touareg VI		46181	Y				
F	2-Wheel DN	No			271791	Y				
F	2-Wheel DN	No			19561	Y				
F	2-Wheel DN	No	Audi A6 Cv		22221	Y				
A	All Wheel IN	No	Audi A7 qu		117681	Y				
A	All Wheel IN	No	Audi A6 qu		161521	Y				
F	2-Wheel DN	No			50311	Y				
F	2-Wheel DN	No			6181	Y				
A	All Wheel IN	No			177761	Y				
A	All Wheel IN	No			57581	Y				
A	All Wheel IN	No			26121	Y				
A	All Wheel IN	No			30071	Y				
A	All Wheel IN	No			21161	Y				
A	All Wheel IN	No			8261	Y				
A	All Wheel IN	No			29431	Y				
A	All Wheel IN	No			12611	Y				
A	All Wheel IN	No			10931	Y				
A	All Wheel IN	No			2741	Y				
A	All Wheel IN	No			3721	Y				
A	All Wheel IN	No			971	Y				
A	All Wheel IN	No			2121	Y				
F	2-Wheel DN	No			92941	Y				
F	2-Wheel DN	No			92921	Y				
A	All Wheel IN	No			5041	Y				
A	All Wheel IN	No			19091	Y				
A	All Wheel IN	No	A8L		37921	Y				
A	All Wheel IN	No	A8		5631	Y				
A	All Wheel IN	No			1531	Y				
A	All Wheel IN	No			1281	Y				
A	All Wheel IN	No	Gallardo C		11	Y				
spaddles)	All Wheel IN	No	R8 Spyder		481	Y				
F	2-Wheel DN	No	A3 frt man		6411	Y				
spaddles)	2-Wheel DN	No			21261	Y				
A	All Wheel IN	No	A3 quattro		6331	Y				
A	All Wheel IN	No	TT Coupe c		12611	Y				
A	All Wheel IN	No	TT Coupe c		5761	Y				
spaddles)	All Wheel IN	No	R8 AM		1211	Y				

A	All Wheel IN	No	R8 Spyder	39I	Y
A	All Wheel IN	No	R8 manual	109I	Y
A	All Wheel IN	No	TTRS	422I	Y
F	2-Wheel DN	No	Tiguan froi	17664I	Y
F	2-Wheel DN	No	Tiguan M6	598I	Y
F	2-Wheel DN	No		2212I	Y
A	All Wheel IN	No		2822I	Y
A	All Wheel IN	No	Gallardo Si	3I	Y
A	All Wheel IN	No		252I	Y
R	2-Wheel DN	No		233I	Y
A	All Wheel IN	No		395I	Y
A	All Wheel IN	No		395I	N
A	All Wheel IN	No		82I	Y
A	All Wheel IN	No		82I	N
A	All Wheel IN	No		994I	Y
A	All Wheel IN	No		994I	N
A	All Wheel IN	No		589I	Y
A	All Wheel IN	No		589I	N
A	All Wheel IN	No	Veyron	5I	Y
F	2-Wheel DN	No		69605D	Y
F	2-Wheel DN	No		2845D	Y
F	2-Wheel DN	No		11140I	Y
A	All Wheel IN	No		183I	Y
F	2-Wheel DN	No		4593I	Y
F	2-Wheel DN	No		4174I	Y
F	2-Wheel DN	No	Passat 3.6I	4457D	Y
F	2-Wheel DN	No		4161I	Y
F	2-Wheel DN	No		78006I	Y
F	2-Wheel DN	No		8713I	Y
F	2-Wheel DN	No		19083I	Y
F	2-Wheel DN	No		525I	Y
F	2-Wheel DN	No		7410I	Y
F	2-Wheel DN	No		2407I	Y
F	2-Wheel DN	No		7397I	Y
F	2-Wheel DN	No		1331D	Y
F	2-Wheel DN	No		15259I	Y
F	2-Wheel DN	No		23488I	Y
F	2-Wheel DN	No		5939I	Y
F	2-Wheel DN	No		3887I	Y
F	2-Wheel DN	No	Jetta Sport	3758I	Y
F	2-Wheel DN	No	Jetta TDI M	9062I	Y
F	2-Wheel DN	No	Golf TDI M	5326I	Y
A	All Wheel IN	No		215I	Y
F	2-Wheel DN	No	Passat TDI	17345D	Y
F	2-Wheel DN	No	Jetta Base	20900I	Y

F	2-Wheel DN	No	Jetta 2.0L I	6817I	Y
F	2-Wheel DN	No		1780I	Y
F	2-Wheel DN	No		93I	Y
ppaddles)	2-Wheel DN	No		57I	Y

Final Calc -Final Calc -Final Calc -ENG\_BLOCENG\_BLOCNUM\_CYLIENG\_TYPE ENG\_TYPE

I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
V	V-shaped €	64SCI	4-Stroke Compres
V	V-shaped €	64SCI	4-Stroke Compres
V	V-shaped €	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
V	V-shaped €	104SI	4-Stroke Spark Ign
V	V-shaped €	104SI	4-Stroke Spark Ign
V	V-shaped €	104SI	4-Stroke Spark Ign
V	V-shaped €	104SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped €	84SI	4-Stroke Spark Ign
V	V-shaped €	84SI	4-Stroke Spark Ign
V	V-shaped €	84SI	4-Stroke Spark Ign
V	V-shaped €	84SI	4-Stroke Spark Ign
V	V-shaped €	104SI	4-Stroke Spark Ign
V	V-shaped €	104SI	4-Stroke Spark Ign
V	V-shaped €	104SI	4-Stroke Spark Ign
V	V-shaped €	84SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped €	84SI	4-Stroke Spark Ign

V	V-shaped €	84SI	4-Stroke Spark Ign
V	V-shaped €	84SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped €	104SI	4-Stroke Spark Ign
V	V-shaped €	124SI	4-Stroke Spark Ign
V	V-shaped €	84SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
W	W-shaped	164SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
W	W-shaped	124SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped €	64SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SCI	4-Stroke Compres
I	Inline	44SCI	4-Stroke Compres
I	Inline	44SCI	4-Stroke Compres
I	Inline	44SCI	4-Stroke Compres
I	Inline	44SCI	4-Stroke Compres
I	Inline	44SCI	4-Stroke Compres
I	Inline	44SCI	4-Stroke Compres
I	Inline	44SCI	4-Stroke Compres
V	V-shaped €	64SI	4-Stroke Spark Ign
I	Inline	44SCI	4-Stroke Compres
I	Inline	44SI	4-Stroke Spark Ign



I	Inline	44SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	54SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign

Engine Type	AIR_INJECTION	AIR_INJECTION	ENG_RATE	CHARGE_ACHARGE	CHARGER_EGR_YN	COOLED_EGR_TYPE	EGR_TYPE	
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	270N	N/A	Y	N	VVTC	Variable Valve Tim
sion Ignition	NA	Not Applic	225A	Air	Y	Y	OT	Other
sion Ignition	NA	Not Applic	225A	Air	Y	Y	OT	Other
ition	AIR	Secondary	333L	Liquid	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	333A	Air	N			
ition	NA	Not Applic	280N	N/A	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	333A	Air	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	333A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	

ition	AIR	Secondary	430N	N/A	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	430N	N/A	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	360A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	211A	Air	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	525N	N/A	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	700N	N/A	N			
ition	AIR	Secondary	505L	Liquid	N	N		
ition	AIR	Secondary	552A	Air	N	N		
ition	AIR	Secondary	552A	Air	N	N		
ition	AIR	Secondary	552A	Air	N	N		
ition	AIR	Secondary	552A	Air	N	N		
ition	AIR	Secondary	552A	Air	N	N		
ition	AIR	Secondary	552A	Air	N	N		
ition	AIR	Secondary	552A	Air	N	N		
ition	AIR	Secondary	552A	Air	N	N		
ition	AIR	Secondary	1200L	Liquid	N			
ition	NA	Not Applic	170N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	AIR	Secondary	200A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	500N	N/A	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	200A	Air	Y	N	VVTC	Variable Valve Tim
ition	AIR	Secondary	200A	Air	Y	N	VVTC	Variable Valve Tim
ition	NA	Not Applic	280N	N/A	Y	N	VVTC	Variable V
ition	NA	Not Applic	170N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	AIR	Secondary	200A	Air	Y	N	VVTC	Variable Valve Tim
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
ition	NA	Not Applic	280N	N/A	Y	N	VVTC	Variable Valve Tim
sion Ignition	NA	Not Applic	140A	Air	Y	Y	EEGR	Electronic/Electric
ition	NA	Not Applic	115N	N/A	N			

ition	NA	Not Applic	115N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	NA	Not Applic	170N	N/A	N			
ition	AIR	Secondary	200A	Air	Y	N	VVTC	Variable Valve Tim

2017-FFP 009660

ing Control	N			N	2	2
ing Control	N			N	2	2
ing Control	N	N	N	N	2	2
ing Control	N		N	N	2	2
ing Control	N		N	N	2	2
ing Control	N		N	N	2	2
ing Control	N		N	N	2	2
ing Control	N			N	2	2
N				N	2	2
N	N		N	N	1	1
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
ing Control	N			N	2	2
ing Control	N			N	2	2
ing Control	N			N	2	2
ing Control	N			N	2	2
ing Control	N			N	2	2
N				N	2	2
N				N	2	2
N				N	2	2
N				N	2	2
N				N	2	2
N				N	2	2
N				N	2	2
N				N	2	2
ing Control	N			N	2	2
N				N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
N		N		N	2	2
ing Control	N	N	N	N	2	2
N				N	2	2
N				N	1	1

	N		N	1	1
	N		N	2	2
	N		N	2	2
ing Control	N		N	2	2





4Y	CONTINUEN	N	5W30	C	Combustio
4Y	CONTINUEN	N	5W30	C	Combustio
4Y	CONTINUEN	N	5W40 VW	C	Combustio
4Y	CONTINUEN	AUDI VALV	5W40	C	Combustio
4Y	CONTINUEN	AUDI VALV	5W40	C	Combustio
4Y	CONTINUEN	AUDI VALV	5W40	C	Combustio
4Y	CONTINUEN	AUDI VALV	5W40	C	Combustio
4Y	INLET AND	N	10W60 VVC		Combustio
4Y	HYDRAULI	N	5W30 VW	C	Combustio
2Y	Variation c	Y	Cylinder d	5W40/VVC	Combustio
4Y	INLET AND	N	5W30 VW	C	Combustio
4Y	INLET AND	N	5W30 VW	C	Combustio
4Y	INLET AND	N	5W30 VW	C	Combustio
4Y	INLET AND	N	5W30 VW	C	Combustio
4Y	INLET AND	N	5W30 VW	C	Combustio
4Y	INLET AND	N	5W30 VW	C	Combustio
4Y	INLET AND	N	5W30 VW	C	Combustio
4Y	INLET AND	N	5W30 VW	C	Combustio
4Y	INLET AND	N	10W60 VVC		Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	CONTINUEN	N	5W40 / VVC		Combustio
4Y	Continuou	N	5W40 VW	C	Combustio
4Y	CONTINUEN	N	5W40 / VVC		Combustio
4Y	CONTINUEN	N	5W40 / VVC		Combustio
4Y	Electronic/N	N	5W40 VW	C	Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	INLET CONN	N	10W40 / VC		Combustio
4Y	CONTINUEN	N	5W40 / VVC		Combustio
4N	N	N	5W40 VW	C	Combustio
4N	N	N	5W40	C	Combustio
4N	N	N	5W40	C	Combustio
4N	N	N	5W40	C	Combustio
4N	N	N	5W40	C	Combustio
4N	N	N	5W40	C	Combustio
4N	N	N	5W40	C	Combustio
4N	N	N	5W40	C	Combustio
4Y	INTAKE/EXN	N	5W40 VW	C	Combustio
4N	N	N	5W40 VW	C	Combustio
2N	N	N	5W40 VW	C	Combustio

2N	N	N	5W40 VW C	Combustio
4Y	INLET CONN	N	10W40 / VC	Combustio
4Y	INLET CONN	N	10W40 / VC	Combustio
4Y	CONTINUUCN	N	5W40 / VVC	Combustio

# BASIC\_FUEBASIC\_FUEMfr Model Type Comments

EDI Spark Ignitcorrected drive axle ratio

EDI Spark Ignition Direct fuel injection

ERDI Common Rail Direct Diesel Injection

ERDI Common Foil viscosity added to CSI, corrected hwy & combined fe and 5-cycle hwy and combined four p

EDI Spark Ignitoil viscosity reprocess

EDI Spark Ignitrelease date updated...annual fuel cost corrected...oil viscosity reprocess

EDI Spark Ignitoil viscosity update, corrected hwy fe

EDI- ADJUSTS ROTATION ANGLE Spark Ignitchanged to full 5-cycle label method with lower city value as last model year.....oil viscosity re

EDI Spark Ignitcorrected highway test from 42.1 to 42.0 mpg and also 5-cycle calculation values

EDI Spark IgnitRECALCULATION WITHOUT EOS MODEL. NO MANUAL TRANS EOS...Corrected unadj unround

EDI Spark Ignitreprocessed to pick-up correct 97/14 interior volume on Sept 13 and added new annual fuel c

EDI Spark Ignitcorrected forward gears to 8...oil viscosity reprocess

EDI Spark Ignitcorrected number of forward speed to 8...oil viscosity reprocess

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark IgnitRELEASE DATE CORRECTED

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark IgnitLOCK-UP TO YES

EDI Spark IgnitLOCK-UP SET TO YES

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignition Direct fuel injection

EDI Spark Ignitlockup to yes for CAFE

EDI Spark Ignitlockup to yes for CAFE

EDI Spark Ignitoil viscosity update

EDI Spark Ignitoil viscosity reprocess; changed trans type to AMS for CAFE

EDI Spark Ignitoil viscosity reprocess, Corrected RLHP

EDI Spark Ignitlockup to yes for CAFE

EDI Spark Ignitoil viscosity reprocess, LOCK-UP CHNAGED TO YES

EDI Spark Ignitcorrect calculated values.....oil viscosity reprocess.....corrected lock up to yes for CAFE

EDI Spark Ignitcorrect calculated values...oil viscosity reprocess....lockup to yes for CAFE

EDI Spark Ignitoil viscosity reprocess, set lockup to yes for CAFE

6DI Spark Ignit oil viscosity reprocess  
 6DI Spark Ignit oil viscosity reprocess  
 6DI Spark Ignit oil viscosity reprocess, corrected hwy fe and combined 5-cycle values  
 6DI Spark Ignit changed gas guzzler exempt status to "N"...release date updated....changed back to "T" exem  
 6DI Spark Ignit corrected calculated 5-cycle values....gas guzzler exempt set to "N"....release date updated... b  
 6DI Spark Ignition Direct fuel injection  
 6DI Spark Ignit idk  
 6DI Spark Ignition Direct fuel injection  
 MFI Multipoint changed lockup to no for CAFE  
 MFI Multipoint/sequential fuel injection  
 MFI Multipoint rounded the gasoline and E85 driving range to a whole mile per 40 CFR 600.311-12(j)(3)  
 MFI Multipoint rounded the gasoline and E85 driving range to a whole mile per 40 CFR 600.311-12(j)(3)  
 MFI Multipoint rounded the gasoline and E85 driving range to a whole mile per 40 CFR 600.311-12(j)(3), adde  
 MFI Multipoint rounded the gasoline and E85 driving range to a whole mile per 40 CFR 600.311-12(j)(3), adde  
 MFI Multipoint rounded the gasoline and E85 driving range to a whole mile per 40 CFR 600.311-12(j)(3), adde  
 MFI Multipoint rounded the gasoline and E85 driving range to a whole mile per 40 CFR 600.311-12(j)(3), adde  
 MFI Multipoint rounded the gasoline and E85 driving range to a whole mile per 40 CFR 600.311-12(j)(3)  
 MFI Multipoint rounded the gasoline and E85 driving range to a whole mile per 40 CFR 600.311-12(j)(3)  
 MFI Multipoint oil viscosity update  
 MFI Multipoint reprocessed to replaced carline "NMS" with newly announced name "Passat"  
 MFI Multipoint reprocessed to replaced carline "NMS" with newly announced name "Passat": correct annua  
 6DI Spark Ignit corrected final drive ratio  
 6DI Spark Ignit changed lock-up to yes  
 6DI Spark Ignit Changed lock-up to yes...corrected combined value  
 6DI Spark Ignition Direct fuel injection  
 6DI Spark Ignit reprocess for oil viscosity update  
 MFI Multipoint/sequential fuel injection  
 MFI Multipoint/sequential fuel injection  
 MFI Multipoint/sequential fuel injection  
 MFI Multipoint/sequential fuel injection  
 MFI Multipoint corrected RLHP  
 MFI Multipoint corrected RLHP  
 MFI Multipoint corrected RLHP  
 6DI Spark Ignit hwy fe corrected and 5-cycle label recalculated  
 6RDI Common F corrected final drive ratio  
 6RDI Common F reprocessed to pick-up oil viscosity, lockup to yes for CAFE  
 6RDI Common F corrected trans lockup to yes  
 6RDI Common F corrected trans lockup to yes  
 6RDI Common F corrected trans lockup to yes  
 6RDI Common F CORRECTED AXLE ON JETTA EDV AND REMOVED SECOND CONFIGURATION  
 6RDI Common F CORRECTED EDV AXLE RATION AND REMOVED A CONFIGUATION....oil viscosity  
 6RDI Common F correct axle on EDV , removed a configuration..oil viscosity  
 6RDI Spark Ignition Direct fuel injection  
 6RDI Common F corrected annual fuel cost.....corrected release date...oil viscosity.....hwy fe corrected and 5-c  
 MFI Multipoint reprocessed to pick-up oil viscosity, correct two averaged hwy tests and recalculated 5-cycle v

MFI	Multipointreprocessed for oil viscosity
MFI	Multipoint/sequential fuel injection
MFI	MultipointCreated for 2012 Final CAFE, this model was not wholesaled to dealers as new and will only b
GDI	Spark Ignitcreated for final CAFE, corrected trans to AMS lockup yes

lace values

process

ed city value  
ost @ 3.95/gallon Prem

pt for truck per D. Good discussion 6/29/2011..corrected unrounded unadj combined value...oil viscosity reprocess  
ack to gas guzzler tax exempt per discussion with D. Good 6/29/2011..oil viscosity reprocessed

d Continental Supersports Convertible ISR model configuration data, new code - data substitution.  
d Continental Supersports Convertible ISR model configuration data, new code - data substitution.  
d Continental Supersports Convertible ISR model configuration data, new code - data substitution.  
d Continental Supersports Convertible ISR model configuration data, new code - data substitution.

I fuel cost to 1732 (rounding error)

ycle label recalculated..adj cost to 2012 fuel prices  
alues, corrected rounding on multiple city bags and US06

e sold at auction as used.



CAFE_MOI	CAFE Mfr	CAFE Mfr (Compliance)	CAFE ID	Carline Mf	Carline Mf	MODEL_TY	CALC_ID		
2012	Hyundai	MHYX	LT	Light Truck	646	HYX	Hyundai M	9	18285
2012	Hyundai	MHYX	LT	Light Truck	646	HYX	Hyundai M	22	18288
2012	Hyundai	MHYX	LT	Light Truck	646	HYX	Hyundai M	25	18286
2012	Hyundai	MHYX	LT	Light Truck	646	HYX	Hyundai M	30	18287
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	1	18351
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	2	18357
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	3	18350
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	4	18360
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	5	18359
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	6	18353
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	7	18354
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	8	18347
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	10	18362
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	13	18356
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	14	18361
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	15	18367
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	16	18368
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	17	18352
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	18	18372
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	19	18369
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	20	18363
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	21	18370
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	23	18371
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	26	18349
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	27	18366
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	28	18364
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	29	18345
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	31	18365
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	32	18358
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	33	18346
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	34	18355
2012	Hyundai	MHYX	PV	Passenger	649	HYX	Hyundai M	35	18348

MFR_DIVIS	MFR_DIVIS	CARLINE_C	CARLINE_C	CARLINE_C	ENG_DISP	DISPL_UNI	AIR_ASPIR	AIR_ASPIR
1	HYUNDAI I	76	TUCSON 4	'23	Special Pur	2.4L	NA	Naturally A
1	HYUNDAI I	53	SANTA FE	'23	Special Pur	2.4L	NA	Naturally A
1	HYUNDAI I	53	SANTA FE	'23	Special Pur	3.5L	NA	Naturally A
1	HYUNDAI I	81	VERACRUZ	23	Special Pur	3.8L	NA	Naturally A
1	HYUNDAI I	92	GENESIS R	6	Large Cars	5L	NA	Naturally A
1	HYUNDAI I	90	GENESIS	6	Large Cars	3.8L	NA	Naturally A
1	HYUNDAI I	112	ACCENT	4	Compact C	1.6L	NA	Naturally A
1	HYUNDAI I	112	ACCENT	4	Compact C	1.6L	NA	Naturally A
1	HYUNDAI I	90	GENESIS	6	Large Cars	4.6L	NA	Naturally A
1	HYUNDAI I	91	EQUUS	6	Large Cars	5L	NA	Naturally A
1	HYUNDAI I	122	ELANTRA	5	Midsize Ca	1.8L	NA	Naturally A
1	HYUNDAI I	122	ELANTRA	5	Midsize Ca	1.8L	NA	Naturally A
1	HYUNDAI I	75	TUCSON 2	'22	Special Pur	2.4L	NA	Naturally A
1	HYUNDAI I	75	TUCSON 2	'22	Special Pur	2L	NA	Naturally A
1	HYUNDAI I	75	TUCSON 2	'22	Special Pur	2L	NA	Naturally A
1	HYUNDAI I	132	SONATA	6	Large Cars	2L	TC	Turbocharq
1	HYUNDAI I	132	SONATA	6	Large Cars	2.4L	NA	Naturally A
1	HYUNDAI I	132	SONATA	6	Large Cars	2.4L	NA	Naturally A
1	HYUNDAI I	61	GENESIS C	3	Subcompa	2L	TC	Turbocharq
1	HYUNDAI I	61	GENESIS C	3	Subcompa	2L	TC	Turbocharq
1	HYUNDAI I	61	GENESIS C	3	Subcompa	3.8L	NA	Naturally A
1	HYUNDAI I	61	GENESIS C	3	Subcompa	3.8L	NA	Naturally A
1	HYUNDAI I	52	SANTA FE	'22	Special Pur	2.4L	NA	Naturally A
1	HYUNDAI I	52	SANTA FE	'22	Special Pur	3.5L	NA	Naturally A
1	HYUNDAI I	23	ELANTRA	T7	Small Stati	2L	NA	Naturally A
1	HYUNDAI I	23	ELANTRA	T7	Small Stati	2L	NA	Naturally A
1	HYUNDAI I	90	GENESIS	6	Large Cars	5L	NA	Naturally A
1	HYUNDAI I	80	VERACRUZ	22	Special Pur	3.8L	NA	Naturally A
1	HYUNDAI I	65	VELOSTER	4	Compact C	1.6L	NA	Naturally A
1	HYUNDAI I	65	VELOSTER	4	Compact C	1.6L	NA	Naturally A
1	HYUNDAI I	133	SONATA H	5	Midsize Ca	2.4L	NA	Naturally A
1	HYUNDAI I	42	AZERA	6	Large Cars	3.3L	NA	Naturally A

METH	FUEL	USE_UNIT	TRANS_IN	TRANS_TY	TRANS_TY	TRANS_TY	TOTAL_NU	TRANS_LO	TRANS_CR
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
ⒺP	Gasoline	(FMPG	Auto(A8)	A	Automatic		8Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A8)	A	Automatic		8Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M M		Manual		6N	N	
ⒺP	Gasoline	(FMPG	Auto(A8)	A	Automatic		8Y	N	
ⒺP	Gasoline	(FMPG	Auto(A8)	A	Automatic		8Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M M		Manual		6N	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M M		Manual		5N	N	
G	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M M		Manual		6N	N	
GP	Gasoline	(FMPG	Auto(A5)	A	Automatic		5Y	N	
GP	Gasoline	(FMPG	Manual(M M		Manual		6N	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M M		Manual		6N	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A4)	A	Automatic		4Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M M		Manual		5N	N	
ⒺP	Gasoline	(FMPG	Auto(A8)	A	Automatic		8Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M M		Manual		6N	N	
Ⓔ	Gasoline	(FMPG	Auto(AM6 AM		Automated Manual		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6N	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	

GRV	DRIVE_SYS	Stop-Start	Stop-Start	MODEL_TY	Model_Ty	CAFE Dom	EPA CAFE	IEPA CAFE	IEPA CAFE	IEPA CAFE
4	4-Wheel DN	No		193131		Y				
4	4-Wheel DN	No		125111		Y				
4	4-Wheel DN	No		129001		Y				
4	4-Wheel DN	No		30201		Y				
R	2-Wheel DN	No		26391		Y				
R	2-Wheel DN	No		207741		Y				
F	2-Wheel DN	No		679461		Y				
F	2-Wheel DN	No		55121		Y				
R	2-Wheel DN	No		38111		Y				
R	2-Wheel DN	No		28481		Y				
F	2-Wheel DN	No		1509671		Y				
F	2-Wheel DN	No		32941		Y				
F	2-Wheel DN	No		345481		Y				
F	2-Wheel DN	No		32021		Y				
F	2-Wheel DN	No		1551		Y				
F	2-Wheel DN	No		284271		Y				
F	2-Wheel DN	No		1806011		Y				
F	2-Wheel DN	No		15591		Y				
R	2-Wheel DN	No		48181		Y				
R	2-Wheel DN	No		17071		Y				
R	2-Wheel DN	No		19281		Y				
R	2-Wheel DN	No		10571		Y				
F	2-Wheel DN	No		213561		Y				
F	2-Wheel DN	No		126441		Y				
F	2-Wheel DN	No		143131		Y				
F	2-Wheel DN	No		6821		Y				
R	2-Wheel DN	No		10071		Y				
F	2-Wheel DN	No		55401		Y				
F	2-Wheel DN	No		78011		Y				
F	2-Wheel DN	No		231791		Y				
F	2-Wheel DN	No		197941		Y				
F	2-Wheel DN	No		77451		Y				

EPA CAFE 4 EPA CAFE IFinal Calc -Final Calc -Final Calc -ENG\_BLOCENG\_BLOCNUM\_CYLIENG\_TYPE ENG\_TYPE

I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	84SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
I	Inline	44SI	4-Stroke Spark Ign
V	V-shaped e	64SI	4-Stroke Spark Ign

Engine Typ	AIR_INJEC	AIR_INJEC	ENG_RATE	CHARGE_A	CHARGER_EGR_YN	COOLED_EEGR_TYPE	EGR_TYPE_
ition			176		N	N	
ition			175		N	N	
ition			276		N	N	
ition			260		N	N	
ition			429		N	N	
ition			333		N	N	
ition			138		N	N	
ition			138		N	N	
ition			385		N	N	
ition			429		N	N	
ition			148		N	N	
ition			148		N	N	
ition			176		N	N	
ition			165		N	N	
ition			165		N	N	
ition			274A	Air	N	N	
ition			200		N	N	
ition			198		N	N	
ition			220A	Air	N	N	
ition			220A	Air	N	N	
ition			306		N	N	
ition			306		N	N	
ition			175		N	N	
ition			276		N	N	
ition			138		N	N	
ition			138		N	N	
ition			429		N	N	
ition			260		N	N	
ition			138		N	N	
ition			138		N	N	
ition			166		N	N	
ition			293		N	N	

2017-FFP\_009678





# BASIC\_FUEBASIC\_FUEMfr Model Type Comments

MFI MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

MFI MultipointFUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7

MFI MultipointFUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7

MFI MultipointFUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7

EDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

EDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

EDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

EDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

MFI MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

EDI Spark IgnitChange 12MY Annual Fuel Cost by \$3.7/\$3.95

owing the lift or duration or times (some or all) of the intake or exhaust valves for both to be changed while the e

owing the lift or duration or times (some or all) of the intake or exhaust valves for both to be changed while the e

MFI MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

MFI MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

MFI MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

EDI Spark IgnitChange 12MY Annual Fuel Cost by \$3.7/\$3.95

EDI Spark IgnitChange 12MY Annual Fuel Cost by \$3.7/\$3.95

EDI Spark IgnitChange 12MY Annual Fuel Cost by \$3.7/\$3.95

MFI MultipointChange 12MY Annual Fuel Cost by \$3.7/\$3.95

MFI MultipointChange 12MY Annual Fuel Cost by \$3.7/\$3.95

MFI MultipointChange 12MY Annual Fuel Cost by \$3.7/\$3.95

MFI MultipointChange 12MY Annual Fuel Cost by \$3.7/\$3.95

MFI MultipointFUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7

MFI MultipointFUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7

MFI MultipointFuel Cost Estimate Modification \$3.0 to \$3.7.

MFI MultipointFuel Cost Estimate Modification \$3.0 to \$3.7.

EDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

MFI MultipointFUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7

EDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

EDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

MFI MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

EDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

ngine is in operation.  
ngine is in operation.

CAFE_M	CAFE_Mfr	CAFE_Mfr	Compliance	Compliance	CAFE_ID	Carline_Mf	Carline_Mf	MODEL_TY	CALC_ID
2012	Kia Motors	KMX	LT	Light Truck	644 KMX	Kia Motors		1	18171
2012	Kia Motors	KMX	LT	Light Truck	644 KMX	Kia Motors		5	18170
2012	Kia Motors	KMX	LT	Light Truck	644 KMX	Kia Motors		9	18169
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		3	18151
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		4	18159
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		6	18158
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		11	18166
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		13	18152
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		14	18164
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		15	18148
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		16	18163
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		17	18143
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		18	18144
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		19	18167
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		20	18147
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		22	18165
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		23	18160
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		24	18161
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		25	18150
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		26	18146
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		27	18149
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		28	18155
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		30	18157
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		31	18168
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		32	18145
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		33	18153
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		34	18162
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		35	18156
2012	Kia Motors	KMX	PV	Passenger	643 KMX	Kia Motors		37	18154

MFR_DIV1	MFR_DIV2	CARLINE_1	CARLINE_2	CARLINE_3	CARLINE_4	ENG_DISP	DISPL_UNI	AIR_ASPIR	AIR_ASPIR
1 KIA MOTO	728	SPORTAGE	23		Special Pur	2.4L	NA	Naturally A	
1 KIA MOTO	728	SPORTAGE	23		Special Pur	2L	TC	Turbochar	
1 KIA MOTO	618	SEDONA	20		Special Pur	3.5L	NA	Naturally A	
1 KIA MOTO	729	SPORTAGE	22		Special Pur	2.4L	NA	Naturally A	
1 KIA MOTO	729	SPORTAGE	22		Special Pur	2.4L	NA	Naturally A	
1 KIA MOTO	729	SPORTAGE	22		Special Pur	2L	TC	Turbochar	
1 KIA MOTO	819	SORENTO	22		Special Pur	2.4L	NA	Naturally A	
1 KIA MOTO	818	SORENTO	23		Special Pur	3.5L	NA	Naturally A	
1 KIA MOTO	819	SORENTO	22		Special Pur	3.5L	NA	Naturally A	
1 KIA MOTO	818	SORENTO	23		Special Pur	2.4L	NA	Naturally A	
1 KIA MOTO	819	SORENTO	22		Special Pur	2.4L	NA	Naturally A	
1 KIA MOTO	418	FORTE	5		Midsize Ca	2L	NA	Naturally A	
1 KIA MOTO	418	FORTE	5		Midsize Ca	2L	NA	Naturally A	
1 KIA MOTO	419	FORTE ECC	5		Midsize Ca	2L	NA	Naturally A	
1 KIA MOTO	418	FORTE	5		Midsize Ca	2.4L	NA	Naturally A	
1 KIA MOTO	420	FORTE KO	4		Compact C	2L	NA	Naturally A	
1 KIA MOTO	420	FORTE KO	4		Compact C	2L	NA	Naturally A	
1 KIA MOTO	420	FORTE KO	4		Compact C	2.4L	NA	Naturally A	
1 KIA MOTO	420	FORTE KO	4		Compact C	2.4L	NA	Naturally A	
1 KIA MOTO	219	SOUL ECO	7		Small Stati	1.6L	NA	Naturally A	
1 KIA MOTO	218	SOUL	7		Small Stati	1.6L	NA	Naturally A	
1 KIA MOTO	218	SOUL	7		Small Stati	1.6L	NA	Naturally A	
1 KIA MOTO	218	SOUL	7		Small Stati	2L	NA	Naturally A	
1 KIA MOTO	218	SOUL	7		Small Stati	2L	NA	Naturally A	
1 KIA MOTO	128	RIO	4		Compact C	1.6L	NA	Naturally A	
1 KIA MOTO	128	RIO	4		Compact C	1.6L	NA	Naturally A	
1 KIA MOTO	328	OPTIMA	5		Midsize Ca	2L	TC	Turbochar	
1 KIA MOTO	328	OPTIMA	5		Midsize Ca	2.4L	NA	Naturally A	
1 KIA MOTO	329	OPTIMA H	5		Midsize Ca	2.4L	NA	Naturally A	

METH	FUEL	USE_UNIT	TRANS_IN	TRANS_TY	TRANS_TY	TRANS_TY	TOTAL_NU	TRANS_LO	TRANS_CR
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
G	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M	M	Manual		6N	N	
G	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M	M	Manual		6N	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M	M	Manual		6N	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M	M	Manual		6N	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Manual(M	M	Manual		6N	N	
G	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6Y	N	
Ⓔ	Gasoline	(FMPG	Auto(A6)	A	Automatic		6N	N	

GRADE_VN	DRIVE_SYS	Stop-Start	Stop-Start	MODEL_TY	Model_Ty	CAFE Dom	EPA CAFE	IEPA CAFE	IEPA CAFE	IEPA CAFE	I
4	4-Wheel DN	No		13927I		Y					
4	4-Wheel DN	No		1253I		Y					
F	2-Wheel DN	No		33319I		Y					
F	2-Wheel DN	No		24766I		Y					
F	2-Wheel DN	No		625I		Y					
F	2-Wheel DN	No		1019I		Y					
F	2-Wheel DN	No		21065I		Y					
4	4-Wheel DN	No		19556I		Y					
F	2-Wheel DN	No		19220I		Y					
4	4-Wheel DN	No		15508I		Y					
F	2-Wheel DN	No		31920I		Y					
F	2-Wheel DN	No		50172I		Y					
F	2-Wheel DN	No		1392I		Y					
F	2-Wheel DN	No		6540I		Y					
F	2-Wheel DN	No		4472I		Y					
F	2-Wheel DN	No		4893I		Y					
F	2-Wheel DN	No		503I		Y					
F	2-Wheel DN	No		3565I		Y					
F	2-Wheel DN	No		747I		Y					
F	2-Wheel DN	No		4I		Y					
F	2-Wheel DN	No		31299I		Y					
F	2-Wheel DN	No		9170I		Y					
F	2-Wheel DN	No		57696I		Y					
F	2-Wheel DN	No		2503I		Y					
F	2-Wheel DN	No		24247I		Y					
F	2-Wheel DN	No		1194I		Y					
F	2-Wheel DN	No		23465I		Y					
F	2-Wheel DN	No		72503I		Y					
F	2-Wheel DN	No		10779I		Y					

EPA\_CAFE\_4 EPA\_CAFE IFinal Calc -Final Calc -Final Calc -ENG\_BLOCENG\_BLOCNUM\_CYLIENG\_TYPE ENG\_TYPE.

[illegible]

Engine Typ	AIR_INJEC	AIR_INJEC	ENG_RATE	CHARGE_A	CHARGER_EGR_YN	COOLED_EEGR_TYPE	EGR_TYPE_
ition			176		N	N	
ition			260A	Air	N	N	
ition			271		N	N	
ition			176		N	N	
ition			176		N	N	
ition			260A	Air	N	N	
ition			175		N	N	
ition			276		N	N	
ition			276		N	N	
ition			191		N	N	
ition			191		N	N	
ition			156		N	N	
ition			156		N	N	
ition			156		N	N	
ition			173		N	N	
ition			156		N	N	
ition			156		N	N	
ition			173		N	N	
ition			173		N	N	
ition			138		N	N	
ition			138		N	N	
ition			138		N	N	
ition			164		N	N	
ition			164		N	N	
ition			138		N	N	
ition			138		N	N	
ition			274A	Air	N	N	
ition			200		N	N	
ition			166		N	N	



2017-FFP\_009688



BASIC_FUE	BASIC_FUEM	fr	Model Type	Comments

During the lift or duration or timing (some or all) of the intake or exhaust valves, effective Nov. 2, 2012, changed while the e

GD1 Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

**MFI**      Multipoint FUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7

During the lift operation, at times (some or all) of the intake or exhaust valves, effective Nov. 2, 2012, changed while the engine is running.

Changing the lift or duration or timing (some or all) of the intake or exhaust valves for both to be changed while the engine is running. Multiple Label values updated or all of the modified road-load values, effective Nov. 2, 2012.

GD1 Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

**RFI** Multipoint FUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7

MFI Multipoint1. FUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7 2. The 2012MY Kia Sorento 3.5L is being

MFI Multipoint 1. FUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7 2. The 2012MY Kia Sorento 3.5L is being

⑥DI Spark Ignit1. FUEL COST ESTIMATE MODIFICATION \$3.0 TO \$3.7 2. The 2012MY Kia Sorento 2.4L GDI is b

EDI	Spark IgnitTo correct the typo error of model type HWY & Comb. FE
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**MFI** Multipoint Fuel Cost Estimate Modification \$3.0 to \$3.7.

MFI	Multipoint Fuel Cost Estimate Modification \$3.0 to \$3.7.
-----	--

**R/FI** Multipoint Fuel Cost Estimate Modification \$3.0 to \$3.7.

**MFI** Multipoint Fuel Cost Estimate Modification \$3.0 to \$3.7.

**MFI** Multipoint Fuel Cost Estimate Modification \$3.0 to \$3.7 and type error.

**RFI** Multipoint Fuel Cost Estimate Modification \$3.0 to \$3.7.

**MFI** Multipoint Fuel Cost Estimate Modification \$3.0 to \$3.7 and type error.

MFI	Multipoint Fuel Cost Estimate Modification \$3.0 to \$3.7.
-----	--

SDI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

④DI Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

GD1 Spark IgnitLabel values updated due to modified road-load values; effective Nov.2,2012.

**RMI**      MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

**MFI** MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

owing the lift or duration or timing (some or all) of the intake or exhaust valves for both) to be changed while the engine is running. Spark Ignition Label values updated or all of the modified road-load values, effective Nov. 2, 2012.

owing the lift and duration of valves (some or all) of the intake or exhaust valves, effective Nov. 2, 2012.

SDI Spark Ignition Direct fuel injection

SDI Spark Ignition Direct fuel injection

**RFI**      MultipointLabel values updated due to modified road-load values; effective Nov.2,2012.

ngine is in operation.

ngine is in operation.

ngine is in operation.

certified as a passenger car and classified as an SUV. In the previous model year, the Sorento 3.5L was certified as a  
certified as a passenger car and classified as an SUV. In the previous model year, the Sorento 3.5L was certified as a  
eing certified as a passenger car and classified as an SUV. The vehicle very much looks like an SUV and is easily iden

ngine is in operation.

ngine is in operation.

light-duty truck. Some modifications were made to the 2012MY Sorento 3.5L to the point that the vehicle no longer light-duty truck. Some modifications were made to the 2012MY Sorento 3.5L to the point that the vehicle no longer light-duty truck. Some modifications were made to the 2012MY Sorento 3.5L to the point that the vehicle no longer light-duty truck.

r meets the LDT requirements. However, the vehicle still very much looks like an SUV and is easily identified as such  
r meets the LDT requirements. However, the vehicle still very much looks like an SUV and is easily identified as such

by most consumers.  
by most consumers.

**To:** Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]  
**Cc:** Henrietta.Dandy@dot.gov[Henrietta.Dandy@dot.gov]  
**From:** Good, David  
**Sent:** Thur 4/3/2014 11:28:30 PM  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck [Thanks Bob] NNT0

**From:** Peavyhouse, Robert  
**Sent:** Thursday, April 03, 2014 2:26 PM  
**To:** Good, David  
**Cc:** Henrietta.Dandy@dot.gov  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Henrietta,

I just used the normal query to generate these. The fuel economy values have been removed because these datasets are not official.

The query for the 2011 datasets failed, so I am going to have to do a custom query for them.

Here are all of the 2012 datasets Dave mentioned below.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Good, David  
**Sent:** Thursday, April 03, 2014 10:40 AM  
**To:** Peavyhouse, Robert  
**Cc:** [Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov)  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck



Bob,

When you get a chance, Henrietta needs the actual sales by carline for the following:

<u>Model Year</u>	<u>Mfr</u>	<u>Car or truck?</u>
2011, 2012	Hyundai	Both
2011, 2012	Kia	Both
2012	VW	Both
2012	Toyota	Pass Car

Henrietta, Spyker didn't import any vehicles into the U.S. in 2011 or 2012. See attached letter from Spyker. Also, I'll attach my spreadsheet with the status of 2012 CAFEs---in case you need it.

Dave

**From:** [Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov) [mailto:[Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov)]

**Sent:** Thursday, April 03, 2014 6:34 AM

**To:** Peavyhouse, Robert; Good, David

**Subject:** Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Hello Robert/David,

Although NHTSA has not resolved the issue of combining VW/Porsche data for MY 2012, please forward the subject documents for VW.

Regarding Hyundai and Kia, have CAFE Letters & Calculations been generated? If so, NHTSA also requests these documents.

These requested documents will assist us to develop Thief reports that require production volumes data by these manufacturers.

Thanks,

Henrietta L. Dandy, DBA

U.S. Department of Transportation

National Highway Traffic Safety Administration

NVS-132/W43-456

1200 New Jersey Avenue, Southeast

Washington, DC 20590

TEL: (202) 366-4802

FAX: (202) 493-2990

[henrietta.dandy@dot.gov](mailto:henrietta.dandy@dot.gov)

**To:** Peavyhouse, Robert[Peavyhouse.Robert@epa.gov]; Good, David[good.david@epa.gov]  
**From:** Henrietta.Dandy@dot.gov  
**Sent:** Fri 4/4/2014 11:36:38 AM  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Bob and Dave,

Thanks for the information. Should I have any questions, I will contact you.

Regards,

Henrietta

**From:** Peavyhouse, Robert [mailto:Peavyhouse.Robert@epa.gov]  
**Sent:** Thursday, April 03, 2014 2:26 PM  
**To:** Good, David  
**Cc:** Dandy, Henrietta (NHTSA)  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Henrietta,

I just used the normal query to generate these. The fuel economy values have been removed because these datasets are not official.

The query for the 2011 datasets failed, so I am going to have to do a custom query for them.

Here are all of the 2012 datasets Dave mentioned below.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Good, David  
**Sent:** Thursday, April 03, 2014 10:40 AM  
**To:** Peavyhouse, Robert  
**Cc:** [Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov)  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Bob,

When you get a chance, Henrietta needs the actual sales by carline for the following:

<u>Model Year</u>	<u>Mfr</u>	<u>Car or truck?</u>
2011, 2012	Hyundai	Both
2011, 2012	Kia	Both
2012	VW	Both
2012	Toyota	Pass Car

Henrietta, Spyker didn't import any vehicles into the U.S. in 2011 or 2012. See attached letter from Spyker. Also, I'll attach my spreadsheet with the status of 2012 CAFEs---in case you need it.

Dave

**From:** [Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov) [<mailto:Henrietta.Dandy@dot.gov>]  
**Sent:** Thursday, April 03, 2014 6:34 AM  
**To:** Peavyhouse, Robert; Good, David  
**Subject:** Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Hello Robert/David,

Although NHTSA has not resolved the issue of combining VW/Porsche data for MY 2012, please forward the subject documents for VW.

Regarding Hyundai and Kia, have CAFE Letters & Calculations been generated? If so, NHTSA also requests these documents.

These requested documents will assist us to develop Thief reports that require production volumes data by these manufacturers.

Thanks,

Henrietta L. Dandy, DBA

U.S. Department of Transportation

National Highway Traffic Safety Administration

NVS-132/W43-456

1200 New Jersey Avenue, Southeast

Washington, DC 20590

TEL: (202) 366-4802

FAX: (202) 493-2990

[henrietta.dandy@dot.gov](mailto:henrietta.dandy@dot.gov)



**To:** Verify Help Desk[verifyhelp@csc.com]  
**Cc:** [Ex. 7]@vw.com]; [Ex. 7]@vw.com];  
[Ex. 7]@vw.com];  
Snyder, Jim[Snyder.Jim@epa.gov]  
**From:** [Ex. 7]  
**Sent:** Fri 4/4/2014 2:39:06 PM  
**Subject:** VW Group - Email Problem for Confirmatory Test Selected Vehicles

Hello Vince,

Yesterday we submitted Decision Information for confirmatory testing for two vehicles.

One vehicle was selected for confirmatory testing, as we learned during discussion with Jim Snyder. However, no email notification was received. A second vehicle which was submitted at the same time (but was waived), resulted in the expected email notification of waiver.

To summarize, the problem is that the notification emails for selected vehicles are not being received for the submitted or other colleagues who are configured in VGA to receive confirmatory notifications.

Please initiate corrective action for this issue as it causes significant delays to our certification process.

Also , if it is possible to forward to us the missing email information, it would be greatly appreciated.

Background information:

User: [Ex. 6]

Mfr: [Ex. 6]

Vehicle ID: [Ex. 6]

Configuration: 0

Thank you,

**Ex. 7**

Engineering & Environmental Office (EEO)

Volkswagen Group of America, Inc.

3800 Hamlin Road

Auburn Hills, MI 48326

Phone:

Fax:

mailto:

**Ex. 7**



**To:** richard.thomas@vw.com[richard.thomas@vw.com]  
**From:** Good, David  
**Sent:** Fri 4/4/2014 3:33:54 PM  
**Subject:** re: 2014 & 2015 FE Guide - Errors in EPA's data base as of April 1, 2014  
VW\_Group\_2014\_FEGuide-all\_rel\_dates-no-sales-4-1-2014.xlsx  
VGA2015\_FEGuide-all\_rel\_dates-no-sales-4-1-2014.xlsx

Richard,

re: 2014 & 2015 FE Guide - Errors in EPA's data base as of April 1, 2014

The macro picked up an error in a 2014 Bentley label.

Attached are the data in Verify as of April 1, 2014. Labels with pea green fill in the first few columns have errors which need to be corrected before I can have the data posted on [www.fueleconomy.gov](http://www.fueleconomy.gov).

The next normal posting of 2014 FE Label data will be on April 15, 2014 (on a monthly schedule where I run the query on the 1st and 15th of the month).

The next normal posting of 2015 FE Label data will be on April 9, 2014 (on a monthly schedule where I run the query on the 1<sup>st</sup>, 9<sup>th</sup>, 15<sup>th</sup> and 23rd of the month).

If you need an important 2014 or 2015 FE Label posted on the web before the next posting, please send me an email message and I'll be glad to have it posted earlier.

Please make any needed corrections to Verify when you get a chance.

Thanks

Dave



EPA comr	VERIFY cc	Model Yr (Mfr Name	Division (t	Carline	Verify Mfr	Index (Mo	Eng Displ #	Cyl
Diesel;		2014 Audi	Audi	Q5	ADX	14	3.0	6
Annual fueY		2014 Bentley	Bentley M	Continenta	BEX	26	4.0	8

Trans as I	City FE (G	Hwy FE (C	Comb FE Low'd City	Low'd HW	Low'd Cor	City Unad	Hwy Unad	Comb Unad
Auto(S8)	24	31	27			29.1832	43.5000	34.2568
s needed. Please revise Verify as needed	15	24	18			19.0000	33.5000	23.5959

City	Highway	Urban	Comb	Unl	Guzzler?	Air Aspir	Air Aspira	Trans	Trans Des	Trans, Otr	# Gears
23.6266	31.3636	26.5783				TC	Turbocharged	SA	Semi-Automatic		8
15.0109	24.4645	18.1706				TC	Turbocharged	SA	Semi-Auto		8

Lockup T	Trans Cre	Drive Sys	Drive Des	Primary B	Max Ethar	Max Biodi	Range1 - IFuel Usag	Fuel Usag
Y	N	A	All Wheel Dr	EADJ03.04UG		5	DU	Diesel, ultra low s
Y	N	A	All Wheel Dr	EADXV04.	10		GP	Gasoline (I

Model	Fuel Type	Gas Guzzl	Gas Guzzl	2Dr Pass	2Dr Lugg	4Dr Pass	4Dr Lugg	Htchbk Pa	Htchbk Lu
MFG (15 miles per gallon)		Truck							
m Unleaded Recommended)		Not exemp		89	11				

Annual Fuel	EPA Calculated	Comment	City2 FE (Hwy2 Fuel Comb2 Fuel)	Low'd City	Low'd Hwy	Low'd Cor	City2 Unadjusted
2150	2150	Engine code corrected, corrected unadjusted unrounded highway and combined CO2 values					
3150	3100	release date change, corrected CO2 unadjusted and adjusted values					



Model Year Fuel Type (VW Fuel Type) Alternative Fuel  
Hwy2 City2 Comb2 Unit Hwy2 City2 Comb2 Unit Range2 - Fuel2 Use Fuel2 Use Fuel2 Unit Fuel2 Unit



Car/Truck	Calc Appr Sales	Release DEPA FE Label Dataset	Unique La	Label Rec	Relabel	Relabel D
	Vehicle Specific 5-cycle	6/21/2013	15461	N	N	
car	Vehicle Specific 5-cycle	6/21/2013	15464	N	N	

Suppress	Police/Em	Comment	Cyl Deact	Cyl Deact	Var Valve	Var Valve	Var Valve	Var Valve	Var Valve	Energy St
N	N	Engine Code	N	CPNA A8 and A8L C	Lines		N			
N	N	Engine Co	Y	Deactivat	Y	Continuous	Y		Multi-lobe I	

[illegible]

but the first two are both in the same order (signed) (the other two are in the left). The in the second form is a 2D array of data at the

Regen BrzRegen BrzRegen BrzDriver CntFuel Cell [Usable H2Fuel Cell (HEV-EV C# Drive MMotor Ger

and gear of the engine, EC Temp greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 kmh

Motor Ger	Rated Mot	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Mete	Fuel Cell V	Off Board	Camless V	Oil Viscosi
				CRDI	Common Rail	Direct Diesel	Injection	N	5W30 VW 50700
				GDI	Spark Ignit			N	5W30 VW

Stop/Start	Stop/Start	Trans in FE	Trans as I	Model Typ	Charge De	Charge De	Charge Su	Charge Su	EPA Calcul
Y	Yes	Auto(S8)	Auto(S8)						
50700	No	Auto(S8)	Auto(S8)						



Model Year	CO <sub>2</sub> (g/km)	EPA Calculated Gas	GEZ Rating	(GHG Rating)	#1 Smog R	#1 Mfr Sm	#1 EPA Sm	SmartWay
	34.3		7	6EADXJ03.04UG		5		
	23.6		4	4EADXV04.		5		

Signal 10 Pull #56 Test #6 for Test Group A) #3 Smog R #3 Mfr Sm #3 EPA Sm SmartWay #4 Smog R #4 Mfr Sm





City	State	County	City/County	PA	Distance	Comb Vol	Higher	Final Label	EPA_FUEL	EPA_GHG	EPA_AMT
				N		3.7		3.7			
				N		5.6		5.6			

2017-FFP\_009725

**EPA\_UNR EPA\_UNR EPA\_UNR EPA\_ADJ EPA\_PHEV Label Subr GHG 1-10 rating on Ethanol (EPA Deter**  
Mr Richard E Thomas Jr  
Mr Richard E Thomas Jr

mined)









EPA com	VERIFY cc	Model Yr	(Mfr Name	Division (1	Carline	Verify Mfr Index (Mo	Eng Displ # Cyl
		2015	Volkswagen	A Group of A3	VGA	7	1.8 4
		2015	Volkswagen	A Group of A3 Cabriolet	VGA	6	1.8 4
		2015	Volkswagen	A Group of A3 Cabriolet quattro	VGA	5	2.0 4
		2015	Volkswagen	A Group of A3 quattro	VGA	4	2.0 4
Diesel;		2015	Volkswagen	A Group of A6 quattro	VGA	17	3.0 6
Diesel;		2015	Volkswagen	A Group of A7 quattro	VGA	18	3.0 6
		2015	Volkswagen	A Group of A8	VGA	11	4.0 8
Diesel;		2015	Volkswagen	A Group of A8L	VGA	15	3.0 6
		2015	Volkswagen	A Group of A8L	VGA	10	4.0 8
		2015	Volkswagen	A Group of A8L	VGA	14	6.3 12
Diesel;		2015	Volkswagen	A Group of Q5	VGA	16	3.0 6
Diesel;		2015	Volkswagen	A Group of Q7	VGA	12	3.0 6
		2015	Volkswagen	A Group of R8	VGA	27	4.2 8
		2015	Volkswagen	A Group of R8	VGA	29	4.2 8
		2015	Volkswagen	A Group of R8 Spyder	VGA	26	4.2 8
		2015	Volkswagen	A Group of R8 Spyder	VGA	28	4.2 8
		2015	Volkswagen	A Group of RS7	VGA	21	4.0 8
		2015	Volkswagen	A Group of S6	VGA	20	4.0 8
		2015	Volkswagen	A Group of S7	VGA	19	4.0 8
		2015	Volkswagen	A Group of S8	VGA	9	4.0 8
		2015	Volkswagen	A Group of TT Coupe quattro	VGA	2	2.0 4
		2015	Volkswagen	A Group of TT Roadster quattro	VGA	3	2.0 4
		2015	Volkswagen	Bentley of Continental	VGA	24	4.0 8
		2015	Volkswagen	Bentley of Continental	VGA Convertible	22	4.0 8
		2015	Volkswagen	Bentley of Flying Spur	VGA	23	4.0 8
		2015	Volkswagen	Volkswagen GTI	VGA	1	2.0 4
		2015	Volkswagen	Volkswagen GTI	VGA	8	2.0 4
Diesel;		2015	Volkswagen	Volkswagen Touareg	VGA	13	3.0 6

Trans as I	City FE (G	Hwy FE (C	Comb FE Low'd	CityLow'd HW	Low'd Cor	City Unad	Hwy Unad	Comb Unad
Auto(AM-S6)	23	33	27			28.9000	46.6000	34.8580
Auto(AM-S6)	24	35	28			30.5000	47.0000	36.2224
Auto(AM-S6)	23	32	26			29.0000	44.2000	34.3094
Auto(AM-S6)	24	33	27			30.0000	44.6000	35.1828
Auto(S8)	24	38	29			30.6987	52.4000	37.7304
Auto(S8)	24	38	29			30.6987	52.4000	37.7304
Auto(S8)	18	30	22			22.5929	39.4000	27.9601
Auto(S8)	24	36	28			29.9399	51.4000	36.8664
Auto(S8)	18	29	22			22.2780	39.1000	27.6266
Auto(S8)	14	22	17			17.2000	28.6000	20.9595
Auto(S8)	24	31	27			29.1832	43.5000	34.2568
Auto(S8)	19	28	22			22.8000	39.1000	28.0649
Auto(AM-S7)	14	23	17			16.4549	29.7195	20.5904
Manual(M6)	11	20	14			13.6544	24.3877	17.0265
Auto(AM-S7)	14	23	17			16.4549	29.7195	20.5904
Manual(M6)	11	20	14			13.6544	24.3877	17.0265
Auto(S8)	16	27	19			19.1000	35.3000	24.0710
Auto(AM-S7)	17	27	20			20.7366	35.2072	25.4423
Auto(AM-S7)	17	27	20			20.7366	35.2072	25.4423
Auto(S8)	17	27	20			19.9000	36.4000	24.9995
Auto(AM-S6)	22	31	26			28.3669	42.1911	33.2728
Auto(AM-S6)	22	31	26			28.3669	42.1911	33.2728
Auto(S8)	15	25	19			19.1000	33.5000	23.6806
Auto(S8)	14	24	17			17.3000	31.8000	21.7662
Auto(S8)	14	24	17			17.3000	31.8000	21.7662
Auto(AM-S6)	25	33	28			30.7000	45.3000	35.9078
Manual(M6)	25	34	28			30.0000	46.4000	35.6740
Auto(S8)	20	29	23			24.1000	41.0000	29.5883

City	Highway	Unrd	Comb	Unr	Guzzler?	Air Aspir	IAir Aspir	Trans	Trans Des	Trans, Otr	# Gears
23.4556	33.3421	27.0673				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
24.3444	34.5845	28.0867				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
23.3120	31.5429	26.4136				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
24.0818	32.6198	27.2970				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
24.4094	38.0485	29.1042				TC	Turbocharged	SA	Semi-Automatic		8
24.4094	38.0485	29.1042				TC	Turbocharged	SA	Semi-Automatic		8
18.2315	29.5343	22.0244				TC	Turbocharged	SA	Semi-Automatic		8
23.8727	36.3252	28.2271				TC	Turbocharged	SA	Semi-Automatic		8
17.9485	28.5015	21.5369				TC	Turbocharged	SA	Semi-Automatic		8
13.8358	21.9706	16.6020	G			NA	Naturally Aspirated	AMS	Semi-Automatic		8
23.6266	31.3636	26.5783				TC	Turbocharged	SA	Semi-Automatic		8
18.7400	27.6200	21.9099				TC	Turbocharged	SA	Semi-Automatic		8
13.5631	22.5823	16.5348	G			NA	Naturally Aspirated	AMS	Automated Manual-	Selectable	(e.g. Au
11.4565	20.0560	14.1955	G			NA	Naturally Aspirated	AMS	Manual		6
13.5631	22.5823	16.5348	G			NA	Naturally Aspirated	AMS	Automated Manual-	Selectable	(e.g. Au
11.4565	20.0560	14.1955	G			NA	Naturally Aspirated	AMS	Manual		6
15.5443	26.5587	19.1108				TC	Turbocharged	SA	Semi-Automatic		8
16.7533	26.9042	20.1794				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
16.7533	26.9042	20.1794				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
16.5369	26.7008	19.9551				TC	Turbocharged	SA	Semi-Automatic		8
22.3665	31.1759	25.6242				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
22.3665	31.1759	25.6242				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
15.2087	25.3816	18.5553				TC	Turbocharged	SA	Semi-Automatic		8
13.8190	23.8488	17.0447	G			TC	Turbocharged	SA	Semi-Automatic		8
13.8190	23.8488	17.0447	G			TC	Turbocharged	SA	Semi-Automatic		8
24.6434	32.6158	27.6891				TC	Turbocharged	AMS	Automated Manual-	Selectable	(e.g. Au
24.9095	34.2917	28.4070				TC	Turbocharged	SA	Manual		6
19.6490	28.9961	22.9829				TC	Turbocharged	SA	Semi-Automatic		8

Lockup T	Trans Cre	Drive Sys	Drive Des	Primary B	Max Ethar	Max Biodi	Range1 - I	Fuel Usag	Fuel Usag
Yomated	N	Manual with P	2-Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	2-Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA		5	DU	Diesel, ultra low s	
Y	N	A	All Wheel Drive	5VGA		5	DU	Diesel, ultra low s	
Y	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA		5	DU	Diesel, ultra low s	
Y	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA		5	DU	Diesel, ultra low s	
Y	N	A	All Wheel Drive	5VGA		5	DU	Diesel, ultra low s	
Yomated	N	Manual with P	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
N	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
N	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Yomated	N	Manual with P	2-Wheel Drive	5VGA	15		GP	Gasoline (Premium	
N	N	F	2-Wheel Drive	5VGA	15		GP	Gasoline (Premium	
Y	N	A	All Wheel Drive	5VGA		5	DU	Diesel, ultra low s	

2017-FFP 009735



Annual Fuel Economy	EPA Calculated	Comment	City2 FE (Hwy2 Fuel Comb2 Fuel)	Low'd City	Low'd Hwy	Low'd Cor	City2 Unadjusted
2100	2100	corrected fuel unit price					
2050	2050	refresh release date, corrected interior volumes, fuel unit price correction					
2200	2200	refreshed release date, interior volume corrected					
2100	2100	carline interior volumes corrected from 2 door to 4 door					
1950	1950						
1950	1950						
2600	2600						
2000	2000						
2600	2600	FUEL AND GHG RATING CORRECTED TO 5					
3350	3350						
2100	2100	Corrected unrounded unadjusted highway and combined CO2 values					
2550	2550						
3350	3350						
4050	4050						
3350	3350						
4050	4050						
3000	3000	highway & combined values corrected, maximum ethanol corrected					
2850	2850	maximum ethanol corrected					
2850	2850	maximum ethanol corrected					
2850	2850	S/S indicator to yes, back to NO.					
2200	2200						
2200	2200						
3000	3000	release date change to March					
3350	3350	data substitution corrected to no for eng code CYCA, release date change to March					
3350	3350	release date change to March					
2050	2050	SMOG corrected to 9 as this is a nationwide Tier 2 BIN 2 and Calif PZEV					
2050	2050						
2450	2450	corrected fuel economy rating to 5					

How much Fuel is used by the vehicle? Alternative Fuel  
Hwy2 City2 Comb2 Unit2 City2 Unit2 Hwy2 Unit2 Comb2 Unit2 Range2 - Fuel2 Us2 Fuel2 Us2 Fuel2 Unit2 Fuel2 Unit2

Relative Fuel Efficiency	CO2 City	CO2 Hwy	CO2 Comb	CO2 Fuel	2 EPA	Description	Intake Val	Exhaust V	Carline CI	Carline CI
						SIDI;	2	23		Subcompact Cars
						SIDI;	2	23		Subcompact Cars
						SIDI;	2	23		Subcompact Cars
						SIDI;	2	23		Subcompact Cars
							2	25		Midsize Cars
							2	25		Midsize Cars
						SIDI;	2	25		Midsize Cars
							2	26		Large Cars
						SIDI;	2	26		Large Cars
						SIDI;	2	26		Large Cars
							2	231		Small SUV 4WD
							2	233		Standard SUV 4W
						SIDI;	2	21		Two Seaters
						SIDI;	2	21		Two Seaters
						SIDI;	2	21		Two Seaters
						SIDI;	2	21		Two Seaters
						SIDI;	2	25		Midsize Cars
						SIDI;	2	25		Midsize Cars
						SIDI;	2	25		Midsize Cars
						SIDI;	2	25		Midsize Cars
						SIDI;	2	23		Subcompact Cars
						SIDI;	2	21		Two Seaters
						SIDI;	2	24		Compact Cars
						SIDI;	2	23		Subcompact Cars
						SIDI;	2	25		Midsize Cars
						SIDI;	2	24		Compact Cars
						SIDI;	2	24		Compact Cars
							2	233		Standard SUV 4W

Car/Truck	Calc Appr Sales	Release DEPA FE Label Dates	Unique La	Label Rec	Relabel	Relabel D
car	Vehicle Specific 5-cycle	2/25/2014	15406	N	N	
car	Vehicle Specific 5-cycle	3/12/2014	15407	N	N	
car	Vehicle Specific 5-cycle	3/12/2014	15317	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15320	N	N	
car	Vehicle Specific 5-cycle	6/10/2014	15458	N	N	
car	Vehicle Specific 5-cycle	6/10/2014	15459	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15385	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15456	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15386	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15442	N	N	
	Vehicle Specific 5-cycle	6/10/2014	15460	N	N	
D	Vehicle Specific 5-cycle	3/12/2014	15408	N	N	
car	Vehicle Specific 5-cycle	3/19/2014	15493	N	N	
car	Vehicle Specific 5-cycle	3/19/2014	15497	N	N	
car	Vehicle Specific 5-cycle	3/19/2014	15492	N	N	
car	Vehicle Specific 5-cycle	3/19/2014	15496	N	N	
car	Vehicle Specific 5-cycle	3/12/2014	15577	N	N	
car	Vehicle Specific 5-cycle	3/12/2014	15576	N	N	
car	Vehicle Specific 5-cycle	3/12/2014	15575	N	N	
car	Vehicle Specific 5-cycle	5/15/2014	15400	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15302	N	N	
car	Vehicle Specific 5-cycle	1/15/2014	15303	N	N	
car	Vehicle Specific 5-cycle	3/28/2014	15558	N	N	
car	Vehicle Specific 5-cycle	3/28/2014	15557	N	N	
car	Vehicle Specific 5-cycle	3/28/2014	15559	N	N	
car	Vehicle Specific 5-cycle	4/1/2014	15293	N	N	
car	Vehicle Specific 5-cycle	4/1/2014	15313	N	N	
D	Vehicle Specific 5-cycle	3/15/2014	15417	N	N	

Suppress	Police/Em	Comment	Cyl Deact	Cyl Deact	Var Valve	Var Valve	Var Valve	Var Valve	Energy St
N	N	1.8L Engine	N	Code CNSB	Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	1.8L Engine	N	Code CNSB	Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	2.0L Engine	N	Code CNTC	Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	2.0L Engine	N	Code CNTC	Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N		N		N				
N	N		N		N				
N	N	Engine Code CTGA. A8	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N		N		N				
N	N	Engine Code CTGA. A8	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N	Engine Code CTNA with 2 cylinder deactivation							
N	N		N		N				
N	N	Engine code	N	CNRB	N				
N	N	Engine Code	N	CNDA	Y	CONTINUOUS	INTAKE AND EXHAUST CAM ADJUST		
N	N	Engine Code	N	CNDA	Y	CONTINUOUS	INTAKE AND EXHAUST CAM ADJUST		
N	N	Engine Code	N	CNDA	Y	CONTINUOUS	INTAKE AND EXHAUST CAM ADJUST		
N	N	Engine Code	N	CNDA	Y	CONTINUOUS	INTAKE AND EXHAUST CAM ADJUST		
N	N	Engine Code CRDB (R5)	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N	Engine Code CEUC. S6	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N	Engine Code CEUC. S6	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N	Engine Code CYCA. 68	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N	Generation N (EVO) 2.0L TFSI. ENGINE CODE	CONTINUOUS	VARIABLE	VALVE TIMING				
N	N	Generation N (EVO) 2.0L TFSI. ENGINE CODE	CONTINUOUS	VARIABLE	VALVE TIMING				
N	N	Engine Code CYCA. 68	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N	Engine Code CYCA. 68	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N	Engine Code CYCA. 68	Deactivation of cylinder 1, 2, 3, 4, 5, 6, 7, 8 by setting the bit in the 16-bit data bus						
N	N	2.0L Engine	N	Code CNTA	Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	2.0L Engine	N	Code CNTA	Y	CONTINUOUS	VARIABLE	VALVE TIMING	
N	N	Engine Code	N	CNRB	N				

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second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

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second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

second gear or higher, ECT greater than 40C, engine speed 930 to 3500 RPM, vehicle speed greater than 25 km

Motor	Ger	Rated Motor	Fuel Meter	Fuel Meter	Fuel Meter	Fuel Meter	Fuel Meter	Fuel Cell	Off Board	Camless	V	Oil Viscosi
					GDI	Spark Ignition	Direct Injection	N				5W40 VW 50200
					GDI	Spark Ignition	Direct Injection	N				5W40 VW 50200
					GDI	Spark Ignition	Direct Injection	N				5W40 VW 50200
					GDI	Spark Ignition	Direct Injection	N				5W40 VW 50200
					CRDI	Common Rail	Direct Diesel Injection	N				5W30 VW 50700
					CRDI	Common Rail	Direct Diesel Injection	N				5W30 VW 50700
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
					CRDI	Common Rail	Direct Diesel Injection	N				5W30 VW 50700
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
					GDI	Spark Ignition	Direct Injection	N				5W40 VW 50200
					CRDI	Common Rail	Direct Diesel Injection	N				5W30 VW 50700
					CRDI	Common Rail	Direct Diesel Injection	N				5W30 VW 50700
					GDI	Spark Ignition	Direct Injection	N				5W/30, VW50400
					GDI	Spark Ignition	Direct Injection	N				5W/30, VW50400
					GDI	Spark Ignition	Direct Injection	N				5W/30, VW50400
					GDI	Spark Ignition	Direct Injection	N				5W/30, VW50400
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
					GDI	Spark Ignition	Direct Injection	N				5W40
					GDI	Spark Ignition	Direct Injection	N				5W40
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
h					GDI	Spark Ignition	Direct Injection	N				5W30 VW 50400 /
					GDI	Spark Ignition	Direct Injection	N				5W40 VW 50200
					GDI	Spark Ignition	Direct Injection	N				5W40 VW 50200
					CRDI	Common Rail	Direct Diesel Injection	N				5W30 VW 50700



Stop/Start	Stop/Start	Trans in FE	Trans as I	Model Typ	Charge De	Charge De	Charge Su	EPA Calcul
N	No	Auto(AM-S6)	Auto(AM-S6)					
N	No	Auto(AM-S6)	Auto(AM-S6)					
N	No	Auto(AM-S6)	Auto(AM-S6)					
N	No	Auto(AM-S6)	Auto(AM-S6)					
Y	Yes	Auto(S8)	Auto(S8)					
Y	Yes	Auto(S8)	Auto(S8)					
Y0700	Yes	Auto(S8)	Auto(S8)					
Y	Yes	Auto(S8)	Auto(S8)					
Y0700	Yes	Auto(S8)	Auto(S8)					
N	No	Auto(S8)	Auto(S8)					
Y	Yes	Auto(S8)	Auto(S8)					
N	No	Auto(S8)	Auto(S8)					
N	No	Auto(AM-S7)	Auto(AM-S7)					
N	No	Manual(M6)	Manual(M6)					
N	No	Auto(AM-S7)	Auto(AM-S7)					
N	No	Manual(M6)	Manual(M6)					
Y0700	No	Auto(S8)	Auto(S8)					
Y0700	No	Auto(AM-S7)	Auto(AM-S7)					
Y0700	No	Auto(AM-S7)	Auto(AM-S7)					
Y0700	No	Auto(S8)	Auto(S8)					
N	No	Auto(AM-S6)	Auto(AM-S6) Coupe quattro					
N	No	Auto(AM-S6)	Auto(AM-S6) Coupe quattro					
Y0700	No	Auto(S8)	Auto(S8)					
Y0700	No	Auto(S8)	Auto(S8)					
Y0700	No	Auto(S8)	Auto(S8)					
N	No	Auto(AM-S6)	Auto(AM-S6)					
N	No	Manual(M6)	Manual(M6)					
N	No	Auto(S8)	Auto(S8)					

Model Year	MPG City	MPG Hwy	MPG Comb	EPA Calculated Gas GEZ Rating	GHG Rating	#1 Smog R	#1 Mfr Sm	#1 EPA Sm	SmartWay
	34.9				7	7 FVGAV02.0APA	9		
	36.2				7	7 FVGAV02.0APA	9		
	34.3				6	6 FVGAV02.0APA	9		
	35.2				7	7 FVGAV02.0APA	9		
	37.7				7	6 FVGAI03.0NU4	5		
	37.7				7	6 FVGAI03.0NU4	5		
	28.0				5	5 FVGAV04.0NUA	5		
	36.9				7	6 FVGAI03.0NU4	5		
	27.6				5	5 FVGAV04.0NUA	5		
	21.1				4	4 FVGAV06.3VUM	5		
	34.3				7	5 FVGAI03.0NU4	5		
	28.1				5	4 FVGAT03.0NU3	5		
	20.7				4	4 FVGAV04.2NLC	5		
	17.2				2	2 FVGAV04.2NLC	5		
	20.7				4	4 FVGAV04.2NLC	5		
	17.2				2	2 FVGAV04.2NLC	5		
	24.1				4	4 FVGAV04.0NUA	5		
	25.4				5	5 FVGAV04.0NUA	5		
	25.4				5	5 FVGAV04.0NUA	5		
	25.0				5	5 FVGAV04.0NUA	5		
	33.3				6	6 FVGAV02.0AUA	5		
	33.3				6	6 FVGAV02.0AUA	5		
	23.7				4	4 FVGAV04.0NUA	5		
	21.9				4	4 FVGAV04.0NUA	5		
	21.9				4	4 FVGAV04.0NUA	5		
	35.9				7	7 FVGAV02.0APA	9		
	35.8				7	7 FVGAV02.0APA	9		
	29.6				5	5 FVGAT03.0NU2	5		

Signal 10 Pull #56 Test #6 for Test Group A) #3 Smog R #3 Mfr Sm #3 EPA Sm SmartWay #4 Smog R #4 Mfr Sm

2017-FFP\_009747

2017-FFP\_009748

City	EV	Wounded to nearest EV	Comes from miles	Distance	Comb Vol	Higher Final Label	EPA_FUEL	EPA_GHG	EPA_AMT.
			N		3.7				3.7
			N		3.6				3.6
			N		3.8				3.8
			N		3.7				3.7
			N		3.4				3.4
			N		3.4				3.4
			N		4.5				4.5
			N		3.6				3.6
			N		4.5				4.5
			N		5.9				5.9
			N		3.7				3.7
			N		4.5				4.5
			N		5.9				5.9
			N		7.1				7.1
			N		5.9				5.9
			N		7.1				7.1
			N		5.3				5.3
			N		5.0				5.0
			N		5.0				5.0
			N		5.0				5.0
			N		3.8				3.8
			N		3.8				3.8
			N		5.3				5.3
			N		5.9				5.9
			N		5.9				5.9
			N		3.6				3.6
			N		3.6				3.6
			N		4.3				4.3







mined)

To: [Ex. 7]@vw.com]  
Cc: [Ex. 7]@vw.com]; [Ex. 7]@vw.com]; Snyder, Jim[Snyder.Jim@epa.gov]; Verify Help Desk[verifyhelp@csc.com]; [Ex. 7]@vw.com]  
From: [Ex. 6]  
Sent: Fri 4/4/2014 5:02:44 PM  
Subject: Re: VW Group - Email Problem for Confirmatory Test Selected Vehicles (HLP-5097)

Hello [Ex. 7]

Verify help desk ticket HLP-5097 was opened for your inquiry. Unfortunately, we can not resend the notification. This notification issue is documented in Verify-15481 the fix for which will be deployed in a future release.

Until this issue is fixed you could request a Decision Information Request Dataset Report to see if your vehicle has been selected for confirmatory testing. The report will indicate an ok status if your vehicle has been selected. Please note; however, the report will return an error if the decision status is deleted, waived or completed.

[Ex. 6]

Verify Help Desk  
Staffed by Computer Sciences Corporation,  
Contractor to the Environmental Protection Agency

This is a PRIVATE message. If you are not the intended recipient, please delete without copying and kindly advise us by e-mail of the mistake in delivery. NOTE: Regardless of content, this e-mail shall not operate to bind CSC to any order or other contract unless pursuant to explicit written agreement or government initiative expressly permitting the use of e-mail for such purpose.

To Verify Help Desk@CSC

cc

[Ex. 7]

[Ex. 7]

04/04/2014 10:39 AM

Subject VW Group - Email Problem for Confirmatory Test Selected Vehicles

[Ex. 6]

Yesterday we submitted Decision Information for confirmatory testing for two vehicles.

One vehicle was selected for confirmatory testing, as we learned during discussion with Jim Snyder. However, no email notification was received. A second vehicle which was submitted at the same time (but was waived), resulted in the expected email notification of waiver.

To summarize, the problem is that the notification emails for selected vehicles are not being received for the submitted or other colleagues who are configured in VGA to receive confirmatory notifications.

Please initiate corrective action for this issue as it causes significant delays to our certification process.

Also , if it is possible to forward to us the missing email information, it would be greatly appreciated.

Background information:

User: mgilesvga,

Mfr: VGA,

Ex. 6

Configuration: 0

Thank you,

**Ex. 7**

Volkswagen Group of America, Inc.  
3800 Hamlin Road  
Auburn Hills, MI 48326

Phone:

Fax:

mailto:

**Ex. 7**

**To:** Snyder, Jim[Snyder.Jim@epa.gov]; Haynes, Ben[haynes.ben@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Giles, Michael (EEO)[michael.giles@vw.com]; Thomas, Richard (EEO)[Richard.Thomas@vw.com]  
**From:** Allen, Gregory (EEO)  
**Sent:** Fri 4/4/2014 6:32:43 PM  
**Subject:** FAUA-Q3F Supplemental Information Loaded

Hello Jim,

The supplemental information has been uploaded for test vehicle FAUA-Q3F / 0.

Can you please arrange a confirmatory test date of Monday May 5<sup>th</sup> for the following vehicle.

Model Year = 2015

Manufacturer Code = VGA

Ex. 6
-------

 (Audi Q3 FWD with 2.0l gasoline engine)

Configuration # = 0

Given the tight product launch timing for this model, it would be greatly appreciated you could confirm this test date as soon as possible to avoid vehicle shipping delays from Germany.

Please contact me if you have any questions or concerns.

Regards,

Greg Allen

VWGoA EEO

(248)754-4209

**To:** Henrietta.Dandy@dot.gov[Henrietta.Dandy@dot.gov]; Good, David[good.david@epa.gov]  
**From:** Peavyhouse, Robert  
**Sent:** Mon 4/7/2014 4:23:29 PM  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck  
2011 Hyundai Kia Combined.xlsx

Henrietta,

This is a custom query that pulls out just the info that will distinguish the carline/engine/trans  
and the associated production volume for the 2011 Hyundai and Kia data.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Henrietta.Dandy@dot.gov [mailto:Henrietta.Dandy@dot.gov]  
**Sent:** Friday, April 04, 2014 7:37 AM  
**To:** Peavyhouse, Robert; Good, David  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Bob and Dave,

Thanks for the information. Should I have any questions, I will contact you.

Regards,

Henrietta

**From:** Peavyhouse, Robert [<mailto:Peavyhouse.Robert@epa.gov>]  
**Sent:** Thursday, April 03, 2014 2:26 PM  
**To:** Good, David  
**Cc:** Dandy, Henrietta (NHTSA)  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Henrietta,

I just used the normal query to generate these. The fuel economy values have been removed because these datasets are not official.

The query for the 2011 datasets failed, so I am going to have to do a custom query for them.

Here are all of the 2012 datasets Dave mentioned below.

Robert Peavyhouse  
Compliance Division  
U.S. EPA - OTAQ  
Phone: (734) 214-4814

**From:** Good, David  
**Sent:** Thursday, April 03, 2014 10:40 AM  
**To:** Peavyhouse, Robert  
**Cc:** [Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov)  
**Subject:** RE: Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Bob,

When you get a chance, Henrietta needs the actual sales by carline for the following:

<u>Model Year</u>	<u>Mfr</u>	<u>Car or truck?</u>
2011, 2012	Hyundai	Both

2011, 2012	Kia	Both
2012	VW	Both
2012	Toyota	Pass Car

Henrietta, Spyker didn't import any vehicles into the U.S. in 2011 or 2012. See attached letter from Spyker. Also, I'll attach my spreadsheet with the status of 2012 CAFEs---in case you need it.

Dave

**From:** [Henrietta.Dandy@dot.gov](mailto:Henrietta.Dandy@dot.gov) [mailto:Henrietta.Dandy@dot.gov]

**Sent:** Thursday, April 03, 2014 6:34 AM

**To:** Peavyhouse, Robert; Good, David

**Subject:** Requisition: EPA CAFE Letter & Calculation - 2012 VW PV and Light Truck (Submitted by VW) and 2011/2012 Hyundai and Kia PV and Light Truck

Hello Robert/David,

Although NHTSA has not resolved the issue of combining VW/Porsche data for MY 2012, please forward the subject documents for VW.

Regarding Hyundai and Kia, have CAFE Letters & Calculations been generated? If so, NHTSA also requests these documents.

These requested documents will assist us to develop Thief reports that require production volumes data by these manufacturers.

Thanks,



Henrietta L. Dandy, DBA

U.S. Department of Transportation

National Highway Traffic Safety Administration

NVS-132/W43-456

1200 New Jersey Avenue, Southeast

Washington, DC 20590

TEL: (202) 366-4802

FAX: (202) 493-2990

[henrietta.dandy@dot.gov](mailto:henrietta.dandy@dot.gov)

		CAFE_ID	PRODVOL
Hyundai	PV	374	544,963
Hyundai	LT	368	47,898
Kia	PV	356	375,234
Kia	LT	375	87,865
			1,055,960

MODEL_YEAR	LDPE_CAFE_ID	CALC_ID	DOM_IMP	CAFE_MFR_CD	MODEL_TYPE_INDEX	DIVISION_CD
2011	356	9092	I	KMX	18	1
2011	356	9113	I	KMX	20	1
2011	356	9106	I	KMX	15	1
2011	356	9114	I	KMX	14	1
2011	356	9107	I	KMX	22	1
2011	356	9109	I	KMX	23	1
2011	356	9104	I	KMX	16	1
2011	356	9089	I	KMX	17	1
2011	356	9090	I	KMX	11	1
2011	356	9099	I	KMX	9	1
2011	356	9087	I	KMX	12	1
2011	356	9105	I	KMX	13	1
2011	356	9094	I	KMX	3	1
2011	356	9088	I	KMX	2	1
2011	356	9111	I	KMX	26	1
2011	356	9102	I	KMX	30	1
2011	356	9096	I	KMX	34	1
2011	356	9100	I	KMX	33	1
2011	356	9093	I	KMX	29	1
2011	356	9108	I	KMX	28	1
2011	356	9103	I	KMX	36	1
2011	356	9086	I	KMX	32	1
2011	356	9101	I	KMX	31	1
2011	356	9110	I	KMX	35	1
2011	356	9098	I	KMX	5	1
2011	356	9095	I	KMX	4	1
2011	356	9115	I	KMX	25	1
2011	356	9091	I	KMX	24	1
2011	356	9097	I	KMX	37	1
2011	356	9112	I	KMX	27	1
2011	368	9819	I	HYX	14	1
2011	368	9820	I	HYX	19	1
2011	368	9818	I	HYX	27	1
2011	368	9817	I	HYX	30	1
2011	374	10005	I	HYX	13	1
2011	374	10010	I	HYX	10	1
2011	374	10015	I	HYX	9	1

2011	374	10013		HYX	22	1
2011	374	10023		HYX	21	1
2011	374	10022		HYX	20	1
2011	374	10011		HYX	2	1
2011	374	10003		HYX	1	1
2011	374	10008		HYX	24	1
2011	374	10025		HYX	11	1
2011	374	10021		HYX	6	1
2011	374	10006		HYX	5	1
2011	374	10009		HYX	12	1
2011	374	10007		HYX	3	1
2011	374	10019		HYX	4	1
2011	374	10016		HYX	17	1
2011	374	10004		HYX	18	1
2011	374	10014		HYX	25	1
2011	374	10018		HYX	7	1
2011	374	10020		HYX	8	1
2011	374	10012		HYX	29	1
2011	374	10002		HYX	28	1
2011	374	10024		HYX	31	1
2011	374	10026		HYX	33	1
2011	374	10017		HYX	32	1
2011	374	10001		HYX	26	1
2011	375	10027		KMX	19	1
2011	375	10035		KMX	21	1
2011	375	10030		KMX	10	1
2011	375	10028		KMX	8	1
2011	375	10032		KMX	6	1
2011	375	10034		KMX	7	2
2011	375	10031		KMX	1	1
2011	375	10029		KMX	4	1
2011	375	10033		KMX	38	1

MFR_DIVISION_SHORT_NM	CARLINE_CODE	CARLINE_NAME	ENG_DISPLACEMENT	AIR_ASP_STR
KIA	729	SPORTAGE 2WD	2.4	NA
KIA	729	SPORTAGE 2WD	2.4	NA
KIA	218	SOUL	1.6	NA
KIA	218	SOUL	1.6	NA
KIA	908	RONDO	2.4	NA
KIA	908	RONDO	2.7	NA
KIA	218	SOUL	2	NA
KIA	218	SOUL	2	NA
KIA	19	BORREGO 2WD	4.6	NA
KIA	19	BORREGO 2WD	3.8	NA
KIA	118	RIO	1.6	NA
KIA	118	RIO	1.6	NA
KIA	819	SORENTO 2WD	2.4	NA
KIA	819	SORENTO 2WD	2.4	NA
KIA	328	OPTIMA	2	TC
KIA	419	FORTE ECO	2	NA
KIA	420	FORTE KOUP	2	NA
KIA	420	FORTE KOUP	2	NA
KIA	418	FORTE	2	NA
KIA	418	FORTE	2	NA
KIA	420	FORTE KOUP	2.4	NA
KIA	418	FORTE	2.4	NA
KIA	418	FORTE	2.4	NA
KIA	420	FORTE KOUP	2.4	NA
KIA	819	SORENTO 2WD	3.5	NA
KIA	818	SORENTO 4WD	3.5	NA
KIA	328	OPTIMA	2.4	NA
KIA	328	OPTIMA	2.4	NA
KIA	729	SPORTAGE 2WD	2	TC
KIA	329	OPTIMA HYBRID	2.4	NA
HYUNDAI	76	TUCSON 4WD	2.4	NA
HYUNDAI	81	VERACRUZ 4WD	3.8	NA
HYUNDAI	53	SANTA FE 4WD	2.4	NA
HYUNDAI	53	SANTA FE 4WD	3.5	NA
HYUNDAI	75	TUCSON 2WD	2.4	NA
HYUNDAI	61	GENESIS COUPE	3.8	NA
HYUNDAI	61	GENESIS COUPE	3.8	NA

HYUNDAI	12	ACCENT	1.6	NA
HYUNDAI	12	ACCENT	1.6	NA
HYUNDAI	80	VERACRUZ 2WD	3.8	NA
HYUNDAI	132	SONATA	2.4	NA
HYUNDAI	132	SONATA	2.4	NA
HYUNDAI	91	EQUUS	4.6	NA
HYUNDAI	90	GENESIS	3.8	NA
HYUNDAI	23	ELANTRA TOURING	2	NA
HYUNDAI	23	ELANTRA TOURING	2	NA
HYUNDAI	90	GENESIS	4.6	NA
HYUNDAI	41	AZERA	3.3	NA
HYUNDAI	41	AZERA	3.8	NA
HYUNDAI	75	TUCSON 2WD	2	NA
HYUNDAI	75	TUCSON 2WD	2	NA
HYUNDAI	132	SONATA	2	TC
HYUNDAI	61	GENESIS COUPE	2	TC
HYUNDAI	61	GENESIS COUPE	2	TC
HYUNDAI	52	SANTA FE 2WD	2.4	NA
HYUNDAI	52	SANTA FE 2WD	2.4	NA
HYUNDAI	52	SANTA FE 2WD	3.5	NA
HYUNDAI	122	ELANTRA	1.8	NA
HYUNDAI	122	ELANTRA	1.8	NA
HYUNDAI	133	SONATA HYBRID	2.4	NA
KIA	728	SPORTAGE 4WD	2.4	NA
KIA	728	SPORTAGE 4WD	2.4	NA
KIA	18	BORREGO 4WD	4.6	NA
KIA	18	BORREGO 4WD	3.8	NA
KIA	618	SEDONA	3.5	NA
HYUNDAI	619	ENTOURAGE	3.5	NA
KIA	818	SORENTO 4WD	2.4	NA
KIA	818	SORENTO 4WD	3.5	NA
KIA	728	SPORTAGE 4WD	2	TC

FUEL_STR	TRANS_TYPE_STR	NUM_GEAR	DRV_SYS_STR	PRODVOL
G	A	6	F	24749
G	M	6	F	1224
G	M	5	F	9954
G	A	4	F	0
G	A	4	F	109
G	A	5	F	0
G	A	4	F	83487
G	M	5	F	3529
G	A	6	R	1
G	A	5	R	13
G	A	4	F	17998
G	M	5	F	805
G	M	6	F	2127
G	A	6	F	76713
G	A	6	F	11219
G	A	6	F	3096
G	M	6	F	333
G	A	6	F	3384
G	M	6	F	1069
G	A	6	F	35286
G	M	6	F	507
G	M	6	F	144
G	A	6	F	4643
G	A	6	F	3657
G	A	6	F	30997
G	A	6	4	5545
G	M	6	F	1479
G	A	6	F	48410
G	A	6	F	1544
G	A	6	F	3212
G	A	6	4	12749
G	A	6	4	4202
G	A	6	4	13463
G	A	6	4	17484
G	A	6	F	27892
G	M	6	R	1239
G	A	6	R	3096

G	M	5	F	4136
G	A	4	F	26095
G	A	6	F	6659
G	M	6	F	2694
G	A	6	F	260967
GP	A	6	R	3305
G	A	6	R	10216
G	M	5	F	1364
G	A	4	F	12925
GP	A	6	R	7158
G	A	6	F	616
G	A	6	F	2083
G	A	6	F	4244
G	M	5	F	605
G	A	6	F	25901
GP	A	5	R	5790
GP	M	6	R	1899
G	M	6	F	112
G	A	6	F	22793
G	A	6	F	15833
G	M	6	F	863
G	A	6	F	84764
G	A	6	F	11714
G	A	6	4	16500
G	M	6	4	0
G	A	6	4	0
G	A	5	4	0
G	A	6	F	16717
G	A	6	F	0
G	A	6	4	28536
G	A	6	4	24525
G	A	6	4	1587

**To:** Snyder, Jim[Snyder.Jim@epa.gov]; Haynes, Ben[haynes.ben@epa.gov]  
**Cc:** Rodgers, William (EEO)[William.Rodgers@vw.com]; Thomas, Richard (EEO)[Richard.Thomas@vw.com]; Allen, Gregory (EEO)[Gregory.Allen@vw.com]  
**From:** Giles, Michael (EEO)  
**Sent:** Mon 4/7/2014 4:41:35 PM  
**Subject:** RE: FAUA-Q3F Supplemental Information Loaded

Hello Jim and Ben,

Can you let us know when you expect to have the confirmed test date for the vehicle below?

Thanks

Mike

**From:** Allen, Gregory (EEO)  
**Sent:** Friday, April 04, 2014 2:33 PM  
**To:** snyder.jim@epa.gov; Ben Haynes (Haynes.ben@Epa.gov)  
**Cc:** Rodgers, William (EEO); Giles, Michael (EEO); Thomas, Richard (EEO)  
**Subject:** FAUA-Q3F Supplemental Information Loaded

Hello Jim,

The supplemental information has been uploaded for test vehicle FAUA-Q3F / 0.

Can you please arrange a confirmatory test date of Monday May 5<sup>th</sup> for the following vehicle.

Model Year = 2015

Manufacturer Code = VGA

**Ex. 6** (Audi Q3 FWD with 2.0l gasoline engine)



Configuration # = 0

Given the tight product launch timing for this model, it would be greatly appreciated you could confirm this test date as soon as possible to avoid vehicle shipping delays from Germany.

Please contact me if you have any questions or concerns.

Regards,

Greg Allen

VWGoA EEO

(248)754-4209

**To:** Zimpfer, Amy[Zimpfer.Amy@epa.gov]; robert.babik@gm.com[robert.babik@gm.com]; Byung Ki Ahn (bk.ahn@hyundai.com)[bk.ahn@hyundai.com]; Christian H. Mohrdieck (Christian.Mohrdieck@daimler.com)[Christian.Mohrdieck@daimler.com]; Clark E. Parker (clarkeparker@aqmd.gov)[clarkeparker@aqmd.gov]; Daniel Sperling (dsperling@ucdavis.edu)[dsperling@ucdavis.edu]; Janea Scott (janea.scott@energy.ca.gov)[janea.scott@energy.ca.gov]; Joerg Launer (Jorg.Launer@vw.com)[Jorg.Launer@vw.com]; Justin Ward (justin.ward@tema.toyota.com)[justin.ward@tema.toyota.com]; Kenzo Oshihara (oshihak@nrd.nissan-usa.com)[oshihak@nrd.nissan-usa.com]; r.modlin@chrysler.com[r.modlin@chrysler.com]; Robert Bienenfeld (Robert\_Bienenfeld@ahm.honda.com)[Robert\_Bienenfeld@ahm.honda.com]; Sunita Satyapal Ph. D. (Sunita.Satyapal@ee.doe.gov)[Sunita.Satyapal@ee.doe.gov]

**Cc:** Wilder, Ceciley[Wilder.Ceciley@epa.gov]; gcole@aqmd.gov[gcole@aqmd.gov]; Hosea.Alston@EE.Doe.Gov[Hosea.Alston@EE.Doe.Gov]; Kaori Alarid (kaori.alarid@tema.toyota.com)[kaori.alarid@tema.toyota.com]; Melanie Hobenshield (melanie.hobenshield@afcc-auto.com)[melanie.hobenshield@afcc-auto.com]; Michele Lorton (michele.lorton@energy.ca.gov)[michele.lorton@energy.ca.gov]; Pat Fritschi (pf38@chrysler.com)[pf38@chrysler.com]; Sabine Zeller (sabine.zeller@daimler.com)[sabine.zeller@daimler.com]; Sandra McElroy (sandra.mcelroy@gm.com)[sandra.mcelroy@gm.com]; **Ex. 7**

**Ex. 7** Alex Keros (alexander.keros@gm.com)[alexander.keros@gm.com]; **Ex. 7**

**Ex. 7** Fred Joseck (fred.joseck@ee.doe.gov)[fred.joseck@ee.doe.gov]; Jerome Gregeois (jgregeois@hatci.com)[jgregeois@hatci.com]; MIKULIN, JOHN[MIKULIN.JOHN@EPA.GOV]; Lance Atkins (lance.atkins@nissan-usa.com)[lance.atkins@nissan-usa.com]; mmiyasato@aqmd.gov[mmiyasato@aqmd.gov]; McKinney, Jim@Energy[Jim.McKinney@energy.ca.gov]; Ronald Grasman (ronald.grasman@daimler.com)[ronald.grasman@daimler.com]; **Ex. 7**

**Ex. 7** Olga Gubbins (olga.gubbins@daimler.com)[olga.gubbins@daimler.com]; Pat Krayser[pkayser@aqmd.gov]; **Ex. 7**

**Ex. 7** Arwed Niestroj (arwed.niestroj@daimler.com)[arwed.niestroj@daimler.com]; Bill Elrick[belrick@CAFCP.org]; Bob Cassidy (robert.cassidy@nissan-usa.com)[robert.cassidy@nissan-usa.com]; Brandi Gonzales[bgonzales@CAFCP.org]; Grundler, Christopher[grundler.christopher@epa.gov]; Chris White[cwhite@CAFCP.org]; Dean Kato (dean@intereco.com)[dean@intereco.com]; Frank Seyfried (frank.seyfried@volkswagen.de)[frank.seyfried@volkswagen.de]; **Ex. 7**

**Ex. 7** Jared Farnsworth (jared.farnsworth@tema.toyota.com)[jared.farnsworth@tema.toyota.com]; Juergen Friedrich (juergen.friedrich@daimler.com)[juergen.friedrich@daimler.com]; Kevin Lee (kslee@hatci.com)[kslee@hatci.com]; Kiho Yoo (k.u@hyundai-motor.com)[k.u@hyundai-motor.com]; Linda Carrizosa[lcarrizosa@cafc.org]; Lisa Mirisola (lirisola@aqmd.gov)[lirisola@aqmd.gov]; Mark S. Torigian Esq (Mtorigian@hatci.com)[Mtorigian@hatci.com]; Matt McClory (matt.mcclory@tema.toyota.com)[matt.mcclory@tema.toyota.com]; Matthew Forrest (matthew.forrest@daimler.com)[matthew.forrest@daimler.com]; Randy Roesser (Randy.Roesser@energy.ca.gov)[Randy.Roesser@energy.ca.gov]; Wysor, Tad[wysor.tad@epa.gov]; Takehito Yokoo (takehito.yokoo@tema.toyota.com)[takehito.yokoo@tema.toyota.com]; Tiger Jeong (tigerjeong@hyundai.com)[tigerjeong@hyundai.com]; Tim Olson (tolson@energy.state.ca.us)[tolson@energy.state.ca.us]; William Craven (william.b.craven@daimler.com)[william.b.craven@daimler.com]

**From:** Linda Carrizosa

**Sent:** Mon 4/7/2014 5:30:43 PM

**Subject:** CaFCP Executive Board Meeting agenda is now availalbe

Dear Executive Board:

The April 15, 2014 Executive Board Meeting agenda is now available on MR located here:  
<http://cafcpmembers.org/membersonly/node/3587>.

The EB agenda is also available on our public website, [www.cafcp.org](http://www.cafcp.org), located here:  
[http://cafc.org/getinvolved/events/cafc\\_executive\\_board\\_meeting\\_-\\_april\\_15\\_2014](http://cafc.org/getinvolved/events/cafc_executive_board_meeting_-_april_15_2014)

**RSVP:** If you are attending the 4/15 EB Meeting, please make sure to RSVP here:  
[http://cafc.org/eb201404\\_signup](http://cafc.org/eb201404_signup). If you have already rsvp'd at the link provided... Thank you!

Other meeting materials will be available shortly.

Thank you,

**Linda Carrizosa** | Administrative Assistant | CaFCP

D 916 371 2870 | F 916 375 8005 | [lcarrizosa@cafc.org](mailto:lcarrizosa@cafc.org)

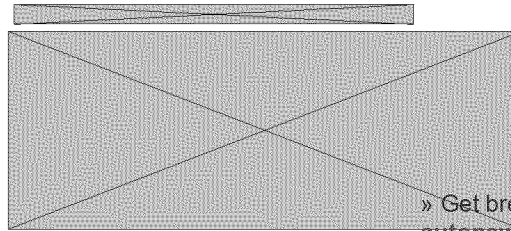
3300 Industrial Blvd., Ste. 1000, West Sacramento, CA 95691 | [www.cafcp.com](http://www.cafcp.com)

**To:** Grundler, Christopher[grundler.christopher@epa.gov]  
**From:** Automotive News  
**Sent:** Mon 4/7/2014 8:46:23 PM  
**Subject:** DAILY: Chevy Impala has airbag software flaw, safety advocate claims | Toyota replaces robots with humans | Why GM dealers have a chance to shine | PACE winners will be announced tonight

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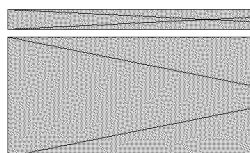
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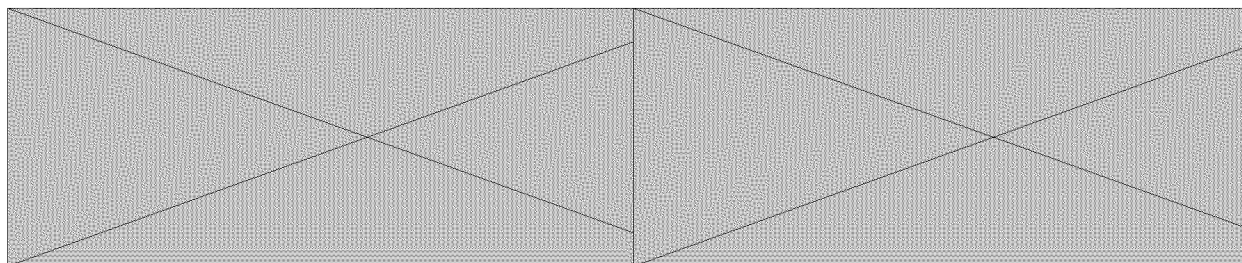
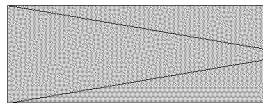
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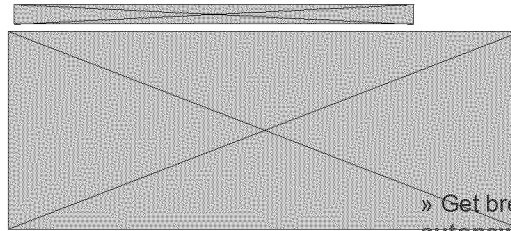


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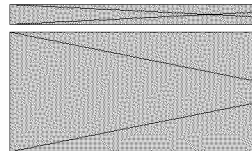
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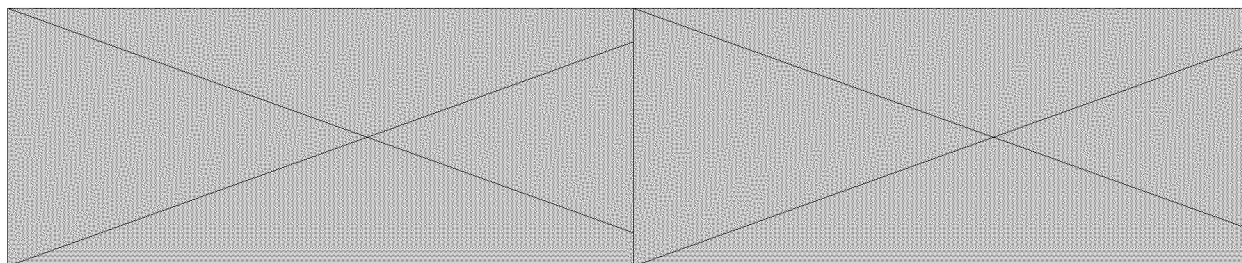
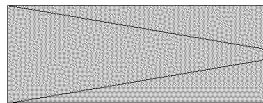
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**To:** Snyder, Jim[Snyder.Jim@epa.gov]  
**Cc:** Allen, Gregory (EEO)[Gregory.Allen@vw.com]; Giles, Michael (EEO)[michael.giles@vw.com]; Glas, Tobias[Tobias.Glas@vw.com]; Mazaitis, Vincent[mazaitis.vincent@epa.gov]  
**From:** Rodgers, William (EEO)  
**Sent:** Tue 4/8/2014 11:08:57 AM  
**Subject:** Audi A8 Confirmatory Test

Hello Jim,

When delivering the Audi A8 yesterday we discussed with Ben that it would be good to run the first set of tests tomorrow as FTP and US06 with the Start/Stop system activated. This way if something happens that might cause the system not to function, we save schedule time by not losing those tests. We also stressed that this car requires the hood latches be closed, the system switch turned on and driver's seat belt to be buckled in order for the system to function.

Also we would again like to witness the start of the first US06 test to observe the cooling fan placement if at all possible.

Regards,

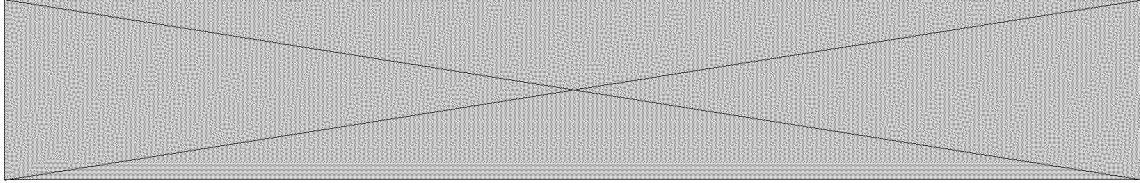
Bill Rodgers

VWGoA EEO

(248) 754-4219

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Tue 4/8/2014 4:04:37 PM  
**Subject:** Green Car Report Daily Headlines

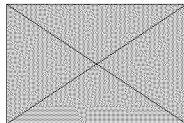
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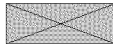
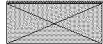
## **Audi Q4 Hybrid Concept, Tesla Model S Convertible, Saab 9-3 Electric: Today's Car News**

Apr 08, 2014 03:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



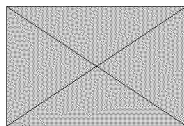
Today on Green Car Reports: Sketches of the Audi Q4 hybrid crossover concept appear ahead of the 2014 Beijing Motor Show, Newport Engineering creates a Tesla Model S convertible, and the first electric Saab 9-3 sedans roll off the assembly line. All this and more on Green Car Reports. One-percent of Norway's cars are already plug-in electrics...

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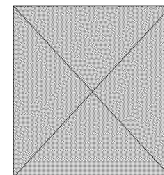
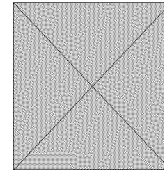
## **First Electric Saab 9-3 Models Built, Will Go To China Test Fleet**

Apr 08, 2014 01:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



National Electric Vehicles Sweden, the Chinese-Swedish company behind the re-launch of Saab, has started production of its first electric Saab models. The electrically-powered 9-3 sedans are built in Sweden, but the first cars will actually be sold in China. According to

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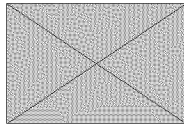
Auto Motor & Sport, NEVS will build 200 electric 9-3s, to be tested in...

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## Want A Tesla Model S Convertible? Newport Engineering Says It'll Build You One

Apr 08, 2014 01:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



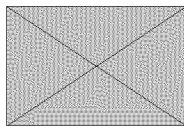
In theory, convertibles are the perfect way to enjoy electric motoring. What better way to experience your zero-emissions car than with the roof down--enjoying the silence, the sounds of nature and the wind in your hair? Tesla's first car, the Roadster, offered just such an experience--and one California firm is now offering the same with its...

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## Audi Q4 Hybrid Crossover Concept: Sketches Appear Before Beijing Show

Apr 08, 2014 12:30 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Antony Ingram)



The market for crossover vehicles grows with every passing year, so it's surprising that few automakers have offered the vehicles with hybrid or plug-in powertrains up until now. One that could is Audi's Q4 crossover, should a production version of the Beijing-bound concept appear in the next few years. Audi isn't one to shy away from a niche and...

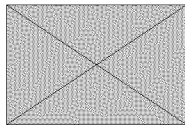
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## Nissan Leaf Vs The Volcano: The Silent Ascent

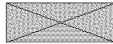
Apr 08, 2014 12:00 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)





Electric cars may inspire "range anxiety" among the unfamiliar, but a single battery charge can take you to some amazing places. The top of a volcano, for example. As part of a recent public-relations campaign centered around Leaf electric-car owners and their experiences, Nissan highlighted Neil Wagner, who takes his Leaf on an unusual journey...

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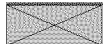
## 2015 Fiat 500 Updated With New Instrument Cluster, Display Options

Apr 08, 2014 11:30 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



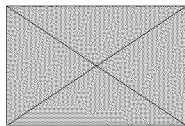
Details on the 2015 Fiat 500, which will feature a handful of updates, have now been released a week before the car is showcased at the 2014 New York Auto Show. The most significant change is a 7-inch TFT (Thin-Film Transistor) display in the instrument cluster, which places the speed readout prominently in the center, along with an image of the...

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## One Percent Of Norway's Cars Are Already Plug-In Electrics

Apr 08, 2014 11:00 am | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Matthew Klippenstein)



Overshadowed by their spectacular sales success in March, electric vehicles hit a momentous milestone in Norway last month. Fully one percent of Norway's passenger-car fleet now consists of battery electric vehicles. And this isn't a case of rounding up, either – this is a full 1 percent. As reported by Norwegian website Grønn Bil ("Green...

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**To:** Wright, DavidA[Wright.DavidA@epa.gov]  
**From:** Roxanne Loeffler  
**Sent:** Tue 4/8/2014 6:02:38 PM  
**Subject:** RE: J0366 Task Force Discussion Scope Outline

Hi David,

I posted this in the J3066 document work area for the members. Please post anything relating to J3066 in this document work area.

<http://www.sae.org/servlets/works/addDiscussionFile.do?comtID=TEVLDVPM&docID=J3066&resource>

Please let me know if you have any questions or trouble posting future drafts/documents.

Thanks!

Roxanne

---

**Roxanne Loeffler**

Global Ground Vehicle Standards

**SAE INTERNATIONAL**

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Troy, MI 48084

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e [rloeffler@sae.org](mailto:rloeffler@sae.org)

[www.sae.org](http://www.sae.org)

**From:** Wright, DavidA [mailto:Wright.DavidA@epa.gov]

**Sent:** Thursday, April 03, 2014 1:33 PM

**To:** Tommy\_Chang@ahm.honda.com; patrick.buller@volvocars.com; chris.mccarthy@gm.com; sconrad@hatci.com; tom.beierschmitt@tema.toyota.com; mky@chrysler.com; dennis.pawlak@na.mitsubishi-motors.com; douglas.reid@na.mitsubishi-motors.com; Paulina, Carl; Chris Nevers; Glodich, Jeffrey (J.M.); Yuhase, Nicole (L.); william.beggs@gm.com; drm202@chrysler.com; Jenny.Sigelko@vw.com; nokawa@mazdausa.com; mduoba@anl.com; Roxanne Loeffler

**Cc:** Dalton, Joel; Ellies, Ben; Alson, Jeff; Wehrly, Linc; French, Roberts

**Subject:** J0366 Task Force Discussion Scope Outline

In case I run into difficulty arranging the webex for tomorrow's task force discussion I wanted to provide all of the interested task force members with an electronic copy of the outline I have drafted for our scoping discussion tomorrow.

This is my initial list of thoughts and look forward to input from the task force participants to expand upon the list and help with clarifying the scope.

Regards,

David

David A. Wright

Light-Duty Vehicle Center, Compliance Division

National Vehicle and Fuel Emissions Laboratory

Phone: (734) 214-4467

E-mail: [wright.davida@epa.gov](mailto:wright.davida@epa.gov)

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**Cc:** nic@theicct.org[nic@theicct.org]; Simon, Karl[Simon.Karl@epa.gov]; Bunker, Byron[bunker.byron@epa.gov]; Charmley, William[charmley.william@epa.gov]; Snapp, Lisa[snapp.lisa@epa.gov]; Bunker, Amy[Bunker.Amy@epa.gov]; Hula, Aaron[Hula.Aaron@epa.gov]; Zaremski, Sara[zaremski.sara@epa.gov]; Wehrly, Linc[wehrly.linc@epa.gov]; French, Roberts[french.roberts@epa.gov]; Moran, Robin[moran.robin@epa.gov]; Bolon, Kevin[Bolon.Kevin@epa.gov]; Hengst, Benjamin[Hengst.Benjamin@epa.gov]; Berrier, Judi[Berrier.Judi@epa.gov]  
**To:** Alson, Jeff[alson.jeff@epa.gov]  
**From:** Drew Kodjak  
**Sent:** Wed 4/9/2014 4:49:07 AM  
**Subject:** Re: OTAQ/ICCT Call on Trends/Compliance Data

Thx Jeff.

An impressive list of OTAQ staff for this call.

Perhaps best to identify those who need to be there?

Seems like Bill, Byron and Karl as well as yourself?

Sent from my iPhone

On Apr 7, 2014, at 12:01 PM, "Alson, Jeff" <[alson.jeff@epa.gov](mailto:alson.jeff@epa.gov)> wrote:

When: Tuesday, April 22, 2014 11:00 AM-12:00 PM (GMT-05:00) Eastern Time (US & Canada).  
Where: AA-Room-Office-C35-ConfRoom/AA-OTAQ-OFFICE

Note: The GMT offset above does not reflect daylight saving time adjustments.

\*~\*~\*~\*~\*~\*~\*~\*~\*~\*

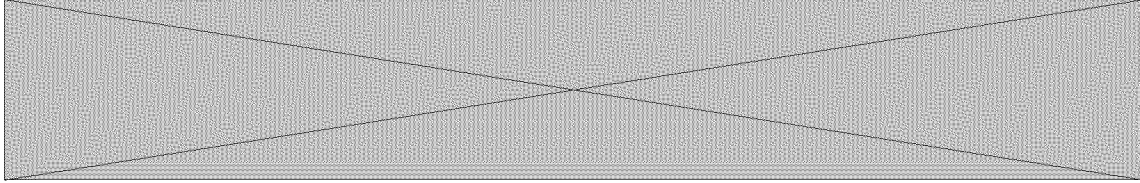
This call is a follow-up to the ICCT memo to Chris Grundler from February 20 regarding Trends and Compliance data.

I am sending this appointment to the directors of CD, ASD, and TCD, along with key staff. We certainly do not need everyone to participate in the call, but we do need at least one rep from each division.

<mime-attachment.ics>

**To:** Pidgeon, Bill[pidgeon.bill@epa.gov]  
**From:** Green Car Reports  
**Sent:** Wed 4/9/2014 4:04:33 PM  
**Subject:** Green Car Report Daily Headlines

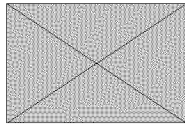
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The latest from your friends at GCR:

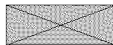
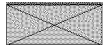
## **Bentley Hybrid Concept, 2015** **Ford Focus, Tesla Credit** **Crunch: Today's Car News**

Apr 09, 2014 03:31 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



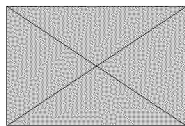
Today on Green Car Reports: The Bentley Hybrid Concept plug-in emerges, we cover the updates to the 2015 Ford Focus, and we look at why Tesla Motors probably won't like proposed rules changes to the California zero-emission vehicle (ZEV) credits. All this and more on Green Car Reports. The Bentley Hybrid Concept is the British luxury carmaker's...

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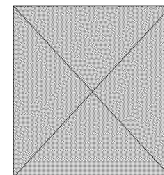
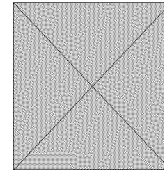
## **Audi A6 e-tron Plug-In Hybrid** **To Be Sold In China**

Apr 09, 2014 02:01 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com)  
(Stephen Edelstein)



Audi is betting big on plug-in hybrids, with plans to launch electrified "e-tron" versions of most of its mainstream models. The latest step toward that goal is the Audi A6 e-tron, a plug-in hybrid luxury sedan that will be sold only in China (at least for the moment). Offered on the long-wheelbase A6 mid-size sedan, the e-tron plug-in hybrid...

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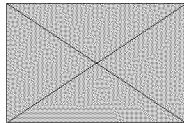


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## **California Hands Loss To Tesla In Proposed ZEV Credit Changes**

**Apr 09, 2014 01:41 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com) (John Voelcker)**



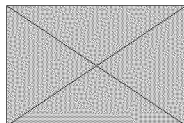
It was one of the thorniest issues facing the powerful California Air Resource Board: Did the ability to swap electric-car battery packs qualify for "fast fueling" incentives meant to prod carmakers to build zero-emission vehicles that could add 300 miles of range in no more time than filling the tank of a gasoline car? Last October, CARB kicked...

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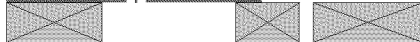
## **2015 Ford Focus Updates: New Front Styling, 1.0-Liter Three-Cylinder Option**

**Apr 09, 2014 12:36 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com) (Stephen Edelstein)**



The 2015 Ford Focus will hit showrooms soon, showing off new front styling and an optional 1.0-liter three-cylinder EcoBoost engine beneath the hood. The 2015 Ford Focus sedan will be unveiled at the 2014 New York Auto Show next year, joining the updated Focus hatchback revealed last month at the 2014 Geneva Motor Show. The revised front end...

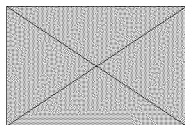
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## **Bentley Hybrid Concept: Preview Of 2017 SUV Plug-In Hybrid System**

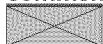
**Apr 09, 2014 12:16 pm | [feedback@highgearmedia.com](mailto:feedback@highgearmedia.com) (John Voelcker)**





As Bentley has been promising for more than two years now, it will introduce a plug-in hybrid powertrain in a future product. Now we know that the first plug-in Bentley ever will come in 2017, in a dedicated version of its upcoming sport-utility vehicle. That confirmation came as the British marque revealed details of the Bentley Hybrid Concept, a...

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